Revision 1; 19961103	As taken from the 'developers cut' distribution of MicroPACS
Revision 2; 19980703	Conquest additions; pre-release 1.3.1.
Revision 3; 19980713	Conquest additions; release 1.3.1
Revision 4; 19990415	Updated (mainly for RT), release 1.3.2
Revision 5; 19990527	Small software updates, birthday, sex, bolus, release 1.3.3
Revision 6; 20000131	NKI sops updated, new compression mode, mirroring, release 1.3.4
Revision 7; 20000316	Added operation as NT service, pre-release 1.3.5
Revision 8; 20000403	Unlimited servers/services, auto-login, self-test, sop choices, fixes for GE Hi-Speed, improved display, fixed hang concurrent C-ECHO's, final release 1.3.5
Revision 9; 20000701	Improved browser menu, other ODBC drivers, release 1.3.6
Revision 10; 20001129	Multithread UNC path fixes, edit ID, sendto, edit, release 1.3.7
Revision 11; 20010318	Hostname fix, runs 4 services, show incoming, release 1.3.8
Revision 12; 20010502	GUI additions database fixing; faster compression; fixed leaks, release 1.3.9
Revision 13; 20011109	better forward/export, extended DB/sop, zip, drag/drop, rel 1.3.10
Revision 14; 20020508	reliability and error handling fixes, UID configurable, dbrev 6
Revision 15; 20020613	StudyModality, db rev 7, find local missing pats, release 1.3.11
Revision 16; 20020822	FilenameSyntax for DICOM-Works; printing, release 1.3.12
Revision 17; 20021215	Various fixes. Non-ODBC driver; read-ahead thread; **release 1.4.0**
Revision 18; 20030303	Bug fix release 1.4.1
Revision 19; 20030710	Release 1.4.2, flexible compression and transfer fixes, db rev 11
Revision 20; 20030922	release 1.4.3, registry/administrator bug/doc; long filenames
Revision 21; 20040406	Release 1.4.4, mysql fix / large disks / db rev 13 / jpeg fixes / GUI uses MAG0..9 / system DSN
Revision 22; 20040426	Release 1.4.4a, mysql fix broke MS-access and SQL server, added DoubleBackSlashToDB (see 4.1.3)
Revision 23; 20040615	Release 1.4.5, built-in DbaseIII suitable for huge archives; better deletion tools; auto-move
Revision 24; 20040722	Release 1.4.6, Added FixKodak; Added "nj" compression; FixPhilips/FixKodak defaults 0 (!)
Revision 25; 20040805	Release 1.4.6a, Fix in move for single image
Revision 29; 20041129	Release 1.4.7, JPEG fix, bugreport button; split/merge, 'k' compress, uid list matching, AE with ~xx
Revision 30; 20050131	Release 1.4.8, Fixed delete, nightlymove, 4-server; hold failed forwards/copies; distribution compiles, initial linux release and initial web interface
Revision 31; 20050912	Release 1.4.9, Fixes in web and Linux, modality worklist
Revision 32; 20051024	Release 1.4.9a, Fix crashes due to no patch in controls.pas
Revision 33; 20060103	Release 1.4.10, VirtualServerFor, fixes leaks, linux, postgres
Revision 34; 20060328	Release 1.4.11, K-Pacs viewer, native MySql, worklist fix, virtualserver fix, flexible filenamesyntax, WEBReadOnly, Fix forwarder retry logic
Revision 35; 20060708	Release 1.4.12alpha: bug fixes, db performance improved, and appendix 5-7
Revision 36; 20061222	Release 1.4.12: bug fixes in dbaseIII driver and in deleting, forwarding and grabbing, resizeable GUI
Revision 37; 20070127	Release 1.4.12b: importconverters, converter scripting, fixes in dbaseIII driver and web access, no nki compression in .dcm

Revision 38; 20070201	Release 1.4.12c: “storage” importconverter, fix ExportFilter and problem in most GUI commands
Revision 39; 20070305	Release 1.4.13alpha: “defer” exportconverter, stuff for k-pacs web viewer; manual split into user and technical part by radtraveller – this is the technical part
Revision 39; 20070707	Release 1.4.13beta: native mysql fixes, delayed converters, sqlite
Revision 40; 20070709	Release 1.4.13beta2: some last fixes
Revision 41; 20071116	Release 1.4.13: more fixes and parameters
Revision 42; 20080322	Release 1.4.14beta: uj compression; database changes; fixes
Revision 43; 20080902	Release 1.4.14: fixes, improved web pages; added query on ‘Number of Patient Related Studies’ items etc.
Revision 44; 20090412	Release 1.4.15alpha: 64 bits, postgres, jpg graphic, etc.
Revision 45; 20090929	Release 1.4.15: mostly bug fixes and a few scripting extensions
Revision 46; 20100905	Release 1.4.16beta: JPEG and JPEG2000 added by Bruce Barton Further extended scripting options; bug fixes; GUI prints to AE
Revision 47; 20101023	Release 1.4.16beta5: bug fixes, WADO server and client, more converters, improved serversideviewer, caching repetitive queries, enabled MAG0\incoming folder, upload from web server, optional overlap of get and send in virtualservers, animated GIF support.
Revision 48; 20110105	Release 1.4.16rc1; service cleans and zips, fixes and more commands
Revision 49; 20110106	Release 1.4.16rc2 bug fixes
Revision 49; 20110208	Release 1.4.16rc4 added lua scripting
Revision 50; 20110402	Release 1.4.16 full release, typo in study table
Revision 51; 20121016	Release 1.4.17alpha full release
Revision 52; 20130525	Release 1.4.17 full release with ZBS scripting IDE interface
Revision 53; 20130813	Release 1.4.17b release, bug fixes
Revision 54; 20130813	Release 1.4.17c bug fixes
Revision 55; 20140309	Release 1.4.17d bug fixes and features
Revision 56; 20160319	Release 1.4.19beta
Revision 57; 20160827	Release 1.4.19beta3
Revision 58; 20161122	Release 1.4.19 (prerelease)
Revision 59; 20170208	Release 1.4.19
Revision 60; 20170430	Release 1.4.19a; loss-less RGB fix; web installer; merger fix
Revision 61; 20171012	Release 1.4.19b printer header/footer/background; gamma clause in bitmap converters; fix cancel C-move crash; several other fixes
Revision 62; 20181110	Release 1.4.19c; added C-GET and DT_ISTR
Revision 63; 20200314	Release 1.5.0; **Open source release on Github**; a small built-in web server, web page and server command attachfile; multi-threaded move and forwards, more scripting features and servercommands, a Lua console using IUP, better Linux options, scriptable dicom echo, etc.
Revision 63; 20200620	Release 1.5.0a; Some fixes including rare Linux data corruption and failure to compress incoming data
Revision 64; 20201102	Release 1.5.0b; Some fixes and basic web interface authentication
Revision 65; 20220828	Release 1.5.0c; Added many features to support DICOMWeb.
Revision 66; 20230701	Release 1.5.0d; Bug fixes in CGET and webserver improvements
Revision 67; 20240925	Release 1.5.0e; Bug fixes
Revision 68; 20250831	Release 1.5.0f; Bug fixes and minor enhancements
Revision 69; 20260920	Release 1.5.0g; Date shift in anonymisation, sqlite backup, compilation with lua built-in, support for streaming web-services, provide access control on IP, several security enhancements, several bug fixes, update methods for Windows and Linux

Revision 70; 20261026 For 1.5.0g4 update documentation shortcomings

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Contact, ConQuest DICOM server and many MicroPACS extensions
Marcel van Herk; Radiotherapy related research; University of Manchester

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SECTION 1. INTRODUCTION

The Conquest Dicom server is a Windows or Linux based PACS system that has, at it's core, the UCDMC DICOM Network Transport libraries. This system has been combined with a complete user interface (Windows only), which also acts as installation program (written in Borland Delphi) to form the Conquest DICOM server. For inux installation scripts and a web interface is available. The Information Definition is designed to be field/run-time programmable. Below the DICOM interface is a database connectivity class that uses built-in SqLite or DBASEIII driver, or talks to ODBC compatible data sources (Windows only), MySql, or PostGres. This combination permits a PACS system with the following features:

- Complete DICOM Interface. Including SCP's for run-time programmable storage IOD's, and SCP for DICOM Queries and Retrieves.
- Programmable SQL Database tables. This user-programmable feature allows the MicroPACS to be custom tailored to a particular Clinical/Research area. For instance, in a CR setting, the PACS system can be programmed to allow users to query on kvp and ma or in a CT setting, the PACS can be programmed to allow queries on slice-distance.
- Communication to database is done via a SqLite (default and advised for small archives of up to 1000.000 images), a built-in dbaseIII driver, any ODBC database (Windows only), MySQL or PostGres. This allows de-coupling PACS and SQL technology. ODBC was tested with:
    - Microsoft Access
    - SQL server
    - Some users have reported successful operation using Interbase and Oracle.

  Note: The built-in dBaseIII driver (Conquest addition) is not a full SQL server and poses limitations on query keys: only queries like 'key' = exact match; 'key*' = value starts with key; and '*key*' = value contains key, are supported, as well as date-range queries and multiple UID matching queries. Only common hierarchical queries are supported with fields that are listed in the single de-normalized table for the selected query level (see file DICOM.SQL). Regular queries passing PatientID, StudyUID, and/or SeriesUID will be (very) fast, even for huge archives. Other (image) queries in large archives (>1000.000 images) may be very slow. Server startup time for huge archives may be long due to in-memory index creation (about 1 minute per 1000.000 images). During indexing the server is read-only and only shows indexed images.

- (Conquest addition) Fast and safe (CRC checked) error free compression (>2x) of image data on disk. Do not use this option if you want to read the image files directly from disk yourselves using third party software.
- (Conquest addition) Easy installation of many servers on a single PC. Servers may run as service(s).
- (Conquest addition) A database browser and slice viewer (Windows only) integrated in the PACS system with options for: viewing the DICOM information in a slice, creating BMP files (ideal for slides), sending selected images, printing, and database fix tools such as changing patient IDs, and deleting and anonymizing studies and series. Also tools to merge or split series. Drag and drop to load DICOM or HL7 files, directories, or a variety of zip files.

- (Conquest addition) A simple query/move user interface (Windows only) for diagnostic purposes, to improve your knowledge of DICOM, and to grab missing data from another server.
- (Conquest addition) Fully integrated functionality in one user interface.
- (Conquest addition) Simple print server (Windows) - to default printer, with optional header, footer and background bitmaps.
- (Conquest addition) Log files, which are daily zipped (Windows only).
- (Conquest addition) Correct display of JPEG, JPEG2000, JPEGLS and RLE compressed images in browser.
- (Conquest addition) Flexible configuration of JPEG and NKI private compression with optional (de)compression of incoming, dropped, transmitted and archived files. All JPEG, JPEG2000 and JPEGLS interfacing was done by by Bruce Barton).
- (More conquest additions) Highly improved performance (e.g., using a read-ahead thread), and image forwarding/action capability.
- For the browser, we use the MiTeC DBFTable component by MichaL MutL. Native drivers use the DLL's from the database system (MySQL or Postgres).
- Version 1.4.12 up includes a preliminary advanced series viewer based on EZDicom / K-Pacs (many thanks to Chris Rorden and Andreas Knopke). Fixes: strip group 2 information of any files sent, retry logic, worklist query.
- Version 1.4.12 improves database performance, has some important bug fixes (rare crashes, incomplete deletion and grabbing, and rare database corruption on dbaseIII). Further it has the possibility to forward multiple images on a single association, and improved documentation
- Version 1.4.12b and c add importconverters and bug fixes in dbaseIII driver and web access and do not allow .dcm with nki compression
- Version 1.4.13 has a web viewer based on K-PACS, SqLite is now included, and more import and export converter options were added such as delayed forwarding and preretrieval. Then small fixed were made in native mysql (also the driver is now included in the package), and several other aspects of the server, such as handling of compression errors, out of memory conditions, and others.
- Version 1.4.14 has a more web options (move, delete and viewers), more exportconverters and ‘Number of Patient Related Studies’ etc. query items
- Version 1.4.15alpa fixes small bugs; and adds QueryConverters, color jpeg decoding with built-in code, frame control, several command line options, an anonymization script, postgres support, and jpeg web export graphics
- Version 1.4.15 fixes more small bugs and adds more scripting options
- Version 1.4.16beta adds internal JPEG and JPEG2000 codecs adapted by Bruce, more scripting options, bug fixes and print to AE from GUI
- Version 1.4.16rc1 adds WADO, virtual query cache, zipping and cleanup at night also for a service, animated gif support, more commands and fixes
- Version 1.4.16rc2 fixes some bugs

- Version 1.4.16rc4 adds lua as very fast and flexible scripting language for converters (with access to configuration, connection, dicom objects, pixel data, database, queries) and web page design
- Full release 1.4.16 fixes several bugs
- Full release 1.4.17alpha fixes bugs and really enhances scripting
- Version 1.4.17 offers connections to the ZeroBraneStudio Lua IDE and further enhances scripting; some fixes for jpeg transfer syntax
- Version 1.4.17b, c and d offer bug fixes and more scripting options
- Version 1.4.17e includes a few fixes in the DICOM communication
- Version 1.4.18 is Bruce Barton's release for MAC and Windows
- Version 1.4.19beta sees a complete recoding of the browser in the GUI for speed and lots of new options such as flexible DICOM modification, server speedup, JpegLS and better Jpeg2000 compression (thanks Bruce Barton), a completely scripted web interface with a new interactive viewer, and options for a new flexible anonymisation server.
- Version 1.4.19beta3 is mainly a minor bug fix release, although exportconverters were broken in 1.4.19beta.
- Version 1.4.19 fixed one major bug: anonymisation failure for old databases and a few small bugs; scripting adds Rclient and overflow no longer crashes jpegLS and jpeg2000 compressors
- Version 1.4.19a fixes bugs in loss-less RGB jpeg decoding and in the merge options; it also adds a web installer (mostly for Linux users)
- Version 1.4.19b adds printer header/footer/background; gamma clause in bitmap converters; fix cancel C-move crash; and several other fixes
- Version 1.4.19c adds C-GET, optional case-insensitive searches (configured through dicom.sql), a small built-in web server (using Ladle), uses bigger file buffer sizes and has some bug fixes.
- Version 1.4.19d fixes PDU code and some bugs
- Version 1.4.19e fixes PDU code, fixes C-GET uncompression and adds several lua functions
- Version 1.5.0 **Open source release on Github**; Implements a small built-in web server, web page and server command attachfile; multi-threaded move and forwards, more scripting features and servercommands, a Lua console using IUP, better Linux options, scriptable dicom echo, etc.
- Version 1.5.0a Includes some fixes; Up to date Python3 bridge; new web utility commands; Bug to stopped incoming data being compressed; Faster incoming processing; Fix anypage-exceptions trunctionation; Rare data corruption on Linux servers due to incorrect error handling of send().
- Version 1.5.0b Optimises the anonymizer, retries loads in incoming, fixes lossless RGB decompression; adds basic authentication to the web interface; fixes index errors on SQL server; fixes the HL7 parser; fixes 'find missing patients' and 'nightly move'.
- Version 1.5.0c Adds fixes, Json and DICOMWeb support; regenerate with wildcard; MD5 hash-based anonymisation; and optionally allows renaming/moving images on reload.

- Version 1.5.0d Adds fixes to CGET and made the internal webserver more functional.
- Version 1.5.0e fixes a few bugs; added j# and n# compressors
- Version 1.5.0f fixes a few bugs and has some enhancements in regen, delayed forwarders and web server.
- Version 1.5.0g adds date shift in anonymisation, sqlite backup, compilation with lua built-in, support for streaming web-services, provide access control on IP, several security enhancements, several bug fixes.
- Version 1.5.0g5 provides a Windows GUI for access control, adds Storage Commitments (by Marcin Makalowski (DivNet/MakeIT divinus)), and a few bug fixes

SECTION A(2). CONFORMANCE STATEMENT

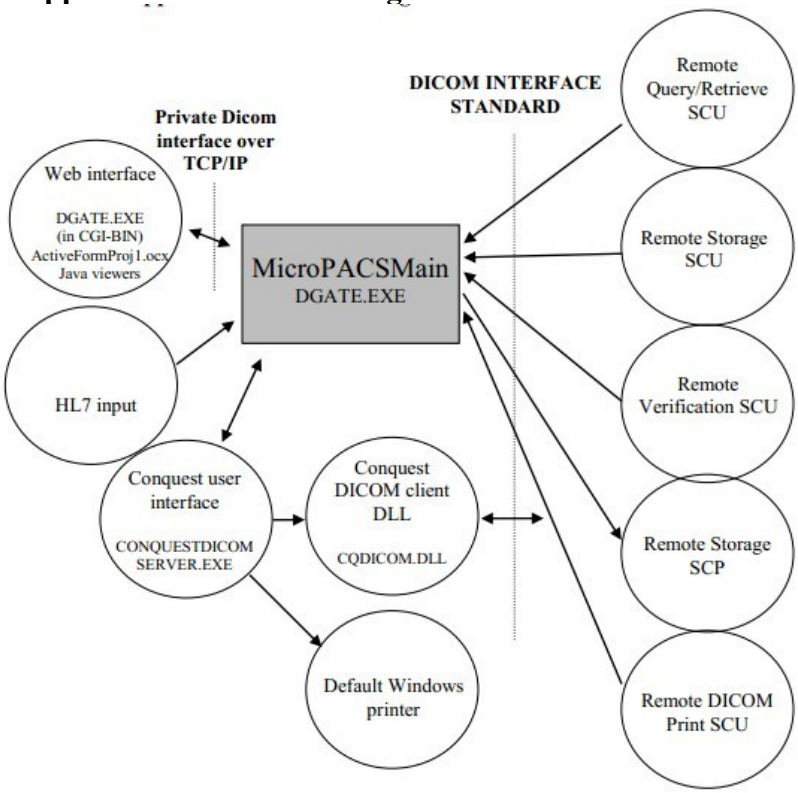
A.0 INTRODUCTION

This conformance statement (CS) details the MicroPACS compliance to DICOM v3.0. It covers all DICOM Service Class roles in this product:

- Various Storage Service Class (SCP) Roles
- Morphing Storage Service Class (SCU) Roles
- Patient Root Query & Retrieve & Get (SCP) Roles
- Study Root Query & Retrieve & Get (SCP) Roles
- Patient/Study Root Query & Retrieve & Get (SCP) Roles
- Verification Service Class (SCP) Role
- Print Management (SCP) Role
- Storage Commitment (SCP) Role
- Worklist Query (SCP) Role
- WADO Server (http) Role
- Scripting host role
- QIDO Server (http) role

A.1 IMPLEMENTATION MODEL

A.1.1 Application Data Flow Diagram



Note: figure refers to outdated web interfaces. The circle left-top should read: Web-interfaces: dgate.exe through dgate.php runs Lua scripts to create app/newweb. Servertask.exe through api/dicom creates the dicomweb api. Another circle should be added to represent the Ladle web server that alternatively created api/dicom and app/newweb.

A.1.2 Functional Definition of AE's

Application Entity 1, MicroPACSMain

Supports the following functions:

- Has access to patient demographics and pixel data in the local database.
- Responds to DICOM associations containing image and worklist query requests using the information in the local database.
- Moves IOD modules to any configured DICOM AE when requested to do so by a remote DICOM AE using a new association.
- Alternatively allows C-GET transfers over the same association.
- Responds to DICOM associations containing storage requests and places the IOD in the local database.
- Responds to DICOM associations containing verification requests.
- Responds to DICOM associations containing print requests and prints items on the default local Windows printer.
- Responds to private DICOM associations to support the WEB interfaces (such as DICOMWeb) and maintenance functions.
- Responds to private DICOM associations to initiate scripting

NOTE: Viewer applications (not part of the server release) such as ClearCanvas will use separate AE's which MUST be configured in ACRNEMA.MAP (use the "**Known DICOM providers"** page) to allow access of images from the DICOM server.

A.1.3 Sequencing of Real - World Activities

For each association the connected IP will be tested against a list of allowed and denied IP addresses in dicom.ini for the overall connection and the specified subtask.

Image Store (AllowedIPsCstore, DeniedIPsCstore):

- The remote AE will initiate a DICOM association.
- Sub-functions are tested for access against IP address of remote AE.
- Any association will trigger Lua scripts *association* and *endassociation*.
- The MicroPACSMain AE will select the appropriate Abstract and Transfer Syntax's from those proposed by the remote AE.
- The remote AE will initiate a C-Store to send the IOD.
- Any command will trigger Lua script *command*.
- The MicroPACSMain AE will respond with a C-Store-RSP upon receipt of the IOD.
- If AllowEmptyPatientID is set to 0 (default), a missing PatientID is replaced by "00000000". If AllowEmptyPatientID=1 and the patient ID is not set, it is looked up from the database for the corresponding study. Conversely if AllowEmptyPatientID=1 and there is no patient ID in the database but there is in the image, the database is updated.
- The following processing occurs using the WorkList database (can be enabled/disabled using 'WorkListMode' in DICOM.INI):
  - WorkListMode=0: no processing occurs.
  - WorkListMode=1: The AccessionNumber is looked up in the local WorkList database, if it is found, any element in the DICOM object that is also present (and non-NULL) in the WorkList database, will be replaced by the value from the WorkList database. These changes are made both in the database and in the image that is stored on disk.

    - WorkListMode=2: As mode 1, but the image will be refused if the AccessionNumber is not found. Rejected images trigger event RejectedImageWorkListConverter.
    - Note: there is no DICOM method of filling the worklist database (see the description of WorkListMode).
- The following processing (can be enabled/disabled by defining 'FixPhilips = 0/1' in DICOM.INI) of the patient ID occurs to conform patient ID's generated by a Philips scanner with NKI policy:
    - From a patient ID of 10 digits (i.e., only exactly 10 digits) and a numeric value larger than 0001000000, starting with at least 2 zeros, the first 2 or 3 leading zeros are stripped. I.e., '0123456789' is not changed, '0020101234' is replaced by '20101234', '0009901234' is replaced by '9901234', and '0000012345' is replaced by 0012345. The result is that a 10 digit ID from Philips that consists of a valid NKI patient ID with extra leading zeros is converted to a valid NKI patient ID. These changes are made both in the database and in the image that is stored on disk.
- The following processing (can be enabled/disabled by defining 'FixKodak = 0/1' in DICOM.INI) of the patient ID occurs to conform patient ID's generated by a Kodak RIS worklist with NKI policy:
    - From a patient ID of 8 digits (i.e., only exactly 8 digits) and a numeric value larger than 01000000, starting with at least 1 zero, the leading zero is stripped. I.e., '0123456789' is not changed, '09901234' is replaced by '9901234', and '00012345' is replaced by 0012345. The result is that a 8 digit ID from Kodak RIS that consists of a valid NKI patient ID of before 2000 with a superfluous leading zero, is converted to a valid NKI patient ID. These changes are made both in the database and in the image that is stored on disk.
- Trailing space are discarded from the patient ID.
- Up to 99 importConverters are called as scripts or rules to modify, delete or log images or VR's in them. These scripts can also start external programs and delete/retrieve/forward parts of the patient's information. All scripts can optionally be programmed in Lua with full access to server configuration and DICOM objects.
- The pixel data is (re or un)compressed if this option is enabled.
- The image is stored and disk and image header data is (re-)entered in the database at all four levels (patient, study, series, and image). The following consistency checking is performed on the data entered in the database (without changing the image information that is stored):
    - Inconsistent link information (e.g., two images of the same series belong to different patients), lead to a reject to store the new image with reported failure to the sending client. The rejected images are passed through (lua) script 'RejectedImageConverter0' to allow extensive logging or repair actions.
    - Filled items will not be overwritten by empty items.
    - Known sex (M or F) in the patient database will not be overwritten with any other value than M or F.
    - A known date of birth in the database will not be overwritten with an empty date or with a date on the 1st of January (which has a high probability to be wrong). When the original date of birth is empty, any value will be accepted.
    - In case of any other inconsistency, the newer values will be written in the database, and the change will be logged as a warning in

serverstatus.log. Inconsistencies in the birthdate are also logged in PacsTrouble.log.
    - The (series) Modality field is appended to the Study Modality field in the database if it does not already contain this Modality.
    - The PatientName, PatientBirthDate and PatientSex items are duplicated in the study table (database rev8 and up), to allow detection of patient ID mix-ups.
- Optionally the image is processed or forwarded (compressed or uncompressed) if Modality and StationName match with values specified in dicom.ini and the optional ExportFilter test is passed using scripts ExportConverter0 .. ExportConverter19 (see appendix 7).
- Some logging of activity occurs.

Query/Retrieve/Get (AllowedIPsCfind, AllowedIPsCmove, AllowedIPsCget, AllowedIPsCmovedest, similar DeniedIPs):

- The remote AE will initiate a DICOM association.
- Sub-functions are tested for access against IP address of remote AE.
- The MicroPACSMain AE will select the appropriate Abstract and Transfer Syntax's from those proposed by the remote AE.
- Queries and retrieves/gets can be inspected, modified or rejected by (Lua) scripts 'QueryConverter0' and 'RetrieveConverter0' (also for gets). The script can also trigger move or deletes of associated data.
- Queries can be forwarded to up to 10 VirtualServerFor entries. Queries that are forwarded are processed by VirtualServerQueryConverter0. The received data is processed by VirtualServerQueryresultConverter0 and will be merged with the data from the server's database and cleaned of duplicates (see appendix 7). Query results may be cached to speed up repetitive queries.
- Optionally the 'Number of Patient Related Studies'-like items will be computed (this executes another query for each result of the first query) and is somewhat slow.
- The returned query results can be processed by a (Lua) script called 'QueryResultConverter0'.
- Upon receipt of a C-Move request, the MicroPACSMain AE will initiate an SSC/SCU association morphing to the stored IOD SOP Class to the specified and configured DICOM AE. On a C-Get request, the existing connection will be used to transmit data. Compressed pixel data will be decompressed or recompressed prior to transmission. Optionally a (Lua) script 'RetrieveResultConverter0' will process the retrieved image data (also for C-Get), or scrubbig will occur to remove selected VR elements. A C-Move response message will be generated synchronously with the associated C-Store.
- Retrieval of data stored on one or more of the VirtualServerFor entries and not on the local server will initiate automatic transfer from the listed servers in the VirtualServerFor table to the local server, followed by (or overlapping) a transfer to the C-MOVE destination. After the retrieval data can be optionally deleted again (see appendix 7).
- Some logging of activity occurs.

Worklist Query:

- The remote AE will initiate a DICOM association.
- Sub-functions are tested for access against IP address of remote AE.

- The MicroPACSMain AE will select the appropriate Abstract and Transfer Syntax's from those proposed by the remote AE.
- Queries can be inspected, modified or rejected by a (Lua) script called 'WorkListQueryConverter0'.
- The MicroPACSMain AE will query the Worklist database and respond with zero or more modality worklist items. The sequence structure of the responses duplicates that of the query.
- The query results can be processed with a (Lua) script called 'ModalityWorkListQueryResultConverter0'.
- Some logging of activity occurs.
- Note: there is no DICOM method of filling the worklist database. It can be filled through the web interface, by drag and dropping HL7 files or programmatic (see the description of WorkListMode).

Verification (AllowedIPsCverification) :
- The remote AE will initiate a DICOM association.
- Sub-functions are tested for access against IP address of remote AE.
- The remote AE will initiate a C-ECHO.
- The MicroPACSMain AE will respond with a C-ECHO-RSP.
- Many private command options can be added to the C-ECHO command.
- Some logging of activity occurs.

DICOM Print:
- The remote AE will initiate a DICOM association.
- The remote AE will create a basic film session using N-CREATE.
- The MicroPACSMain AE will ignore the information but will respond with a N-CREATE-RSP.
- The remote AE will create a basic film box using N-CREATE.
- The MicroPACSMain AE extracts the Image Display Format (only "STANDARD\#rows,#cols" is accepted), and the film orientation (LANDSCAPE or PORTRAIT) and passes this information to the CONQUEST user interface. All other information is ignored.
- The MicroPACSMain AE creates the correct amount of Basic Grayscale or Color Image Box objects for the film page and transmits their UIDs to the remote AE in the N-CREATE-RSP. The UIDs contain information about the page number, number of rows and columns, and the image location on the page that will be used by the CONQUEST user assemble the printed page.
- The remote AE will use N-SET to fill each Image Box object.
- The MicroPACSMain AE will store each incoming Image Box onto disk (in directory "printer_files" on device MAG0) and responds with N-SET-RSP. The name (UID) of the files is passed to the CONQUEST user interface.
- The CONQUEST user interface (Windows only) will queue incoming images and will asynchronously convert each DICOM file into a BMP file, load it in memory and assemble the pictures to be printed on a page with optional header, footer and background bitmaps. Processed DICOM files and BMP files are deleted. *Note: the basic print support in the CONQUEST user interface will not handle multiple simultaneous print requests correctly!*
- The remote AE will request printing of each film or of the complete session using an N-ACTION command for a basic film session or a basic film box.

- The MicroPACSMain AE passes these requests onto the CONQUEST user interface and responds with an N-ACTION-RSP.
- The CONQUEST user interface (Windows only) prints the pages on the default Windows printer. The only way to configure this printer is to change its default document settings in Windows. Printing progress is shown using a simple progress bar on the server status page.
- The remote AE may query the printer status with a N-GET request on the printer object.
- The MicroPACSMain AE will always respond with a N-GET-RSP with a "NORMAL" status and the name of the printer, which is pre-set to "Conquest dicom printer".
- Other N-DELETE, N-SET, and N-EVENTREPORT requests are acknowledged with an adequate RSP and ignored.
- Some logging of activity occurs.
- For non-Windows system, a Lua scriptable printserver is provided (experimental).

Web and WADO access (AllowedIPs for Change,Move,Remote,Script,Status,Store,Wado,Zip,Stow,Delete) **:**

- The remote client will request a web page or REST request
- Sub-functions are tested for access against remote IP address.
- This will trigger dgate.php, or wado.php to request a private DICOM connection with the configured DICOM server
- Web pages are either served as HTML files, with information processed by JavaScript, PhP files, using dgate or servertask to connect to the server, or the HTML is generated by Lua scripts on the server side.
- Links to images are filled through WADO requests which which in turn will request them from the main server over a private DICOM protocol. The main server is responsible for converting DICOM to GIF/BMP/JPG.
- Application can generate arbitrary web pages or web services based on Lua scripts.
- WADO requests which can be converted into normal DICOM retrieves to another server defined in the file app/newweb/dicom.ini using item [wadoservers]bridge.
- Some web viewers based on ImageJA, Weasis, iaViewer, Cornerstone and OHIF are historically included with this release. The scripts provided to drive these viewers should be user modified, except OHIF that is standard configures to with with the api/dicom interface on 127.0.0.1.

```
client    -> webserver        url       http://127.0.0.1/app/newweb/?mode=seriesviewer&series=...
webserver -> dicomserver      query     imagelister:CONQUESTSRV1|.....
client    <- webserver <- dicomserver   query results       (to build list of urls of dicom slices)


Then for each slice that is required (the following line can also use WADO syntax):

control   -> webserver        url       http://127.0.0.1/app/newweb/?mode=dicom&slice=......
webserver -> dicomserver      request   convert_to_dicom:....
control   <- webserver <- dicomserver   dicom data
```

Since 1.5.0b, a PHP script proxy is provided that provides basic authentication and then calls the CGI interface. This proxy removes the need for a CGI client in the web server. Instead dgate and its web interface lua scripts are called directly.

Since 1.5.0c and 1.5.0d, a dicom api is provided by running scripts in a PhP enabled webserver with url rewriting enabled, with extended memory limit and

upload limits recommended. Luiz Oliveira has provided a Node.js based api as well which is in principle compatible but not maintained by me.

Feautures required for DICOMWeb are enabled by (Linux command-line example):

```
sudo a2enmod rewrite
sudo sed -i 's/AllowOverride None/AllowOverride All/g' /etc/apache2/apache2.conf
sudo sed -i 's/memory_limit = 128M/memory_limit = 512M/g' /etc/php/7.4/apache2/php.ini
sudo sed -i 's/upload_max_filesize = 2M/upload_max_filesize = 250M/g' /etc/php/7.4/apache2/php.ini
sudo sed -i 's/post_max_size = 8M/post_max_size = 250M/g' /etc/php/7.4/apache2/php.ini
```

Followed by copying the webserver/api and webserver/app folders to the root of the webserver for an Apache server (typically done by installer software).

In api/dicom/**config.php** one can set the target server (default port 5678 on localhost) and optionally enable user authentication:

```
$exe  = 'servertask -p5678 -q127.0.0.1'     // sets port and IP of Conquest
$userlogin = false;                         // uses single file login system
$wplogin   = false;                         // uses Wordpress login system
```

The built-in server based on Lua Ladle also serves the API and should be ready to go without any installation. The internal webserver is started by the button on the Windows GUI, or (Linux example) by:

```
./dgate "--luastart:require([[ladle]])({port=[[8086]]})"
```

The internal webserver is stopped (Linux example) by, or by the button on the Windows GUI:

```
./dgate "--luastart:dofile([[lua/quitladle.lua]])"
```

The provided http endpoints in the DICOM API are:

http://localhost/api/dicom Root of *extended* DICOMweb API in Apache
http://localhost:8086/api/dicom Root of *extended* API built-in webserver

GET /	About the API
GET /wadouri	WADO provider (wado access)
Requires script access:	
POST /rs/startscript	*Start a script, returns UID*
GET[3] /rs/startscript/{UID}	*Script progress 0..100 (done)*
POST /rs/script	*Run immediate script*
Requires store access:	
POST /rs/attach	*Attach zip or object*
POST /rs/attachdicom	*Attach single object*
Requires remote access:	
GET /rs/modalities	*List modality AE's*
GET /rs/modalities/{AE}	*Echo given modality*
GET[4] /rs/studies?	Query on studies
GET /rs/studies/{uid}	Get study
GET /rs/studies/{uid}/metadata	Get study metadata

GET[1] /rs/studies/{uid}/zip Get zip with study
GET[1,2] /rs/studies/{uid}/move *Move a study*
GET /rs/studies/{uid}/thumbnail Picture of middle image

GET[4] /rs/studies/{uid}/series? Query on series
GET /rs/studies/{uid}/series/{uid} Get Series
GET /rs/studies/{uid}/series/{uid}/metadata Get series metadata
GET[1] /rs/studies/{uid}/series/{uid}/zip Get zip with series (zip access)
GET[1,2] /rs/studies/{uid}/series/{uid}/move *Move series (move access)*
GET /rs/studies/{uid}/series/{uid}/thumbnail Picture of middle image

GET[4] /rs/studies/{uid}/series/{uid}/instances? Query on instances
GET /rs/studies/{uid}/series/{uid}/instances/{uid} Get instance
GET /rs/studies/{uid}/series/{uid}/instances/{uid}/metadata ' metadata
GET[1] /rs/studies/{uid}/series/{uid}/instances/{uid}/zip ' zip
GET[1,2] /rs/studies/{uid}/series/{uid}/instances/{uid}/move *' move*
GET /rs/studies/{uid}/series/{uid}/instances/{uid}/thumbnail ' picture

GET /rs/studies/{uid}/series/{uid}/instances/{uid}/thumbnail/frames/{N} 'pict
GET /rs/studies/{uid}/series/{uid}/instances/{uid}/frames/{N} ' pixel data
GET[1] /rs/studies/{uid}/series/{uid}/instances/{uid}/zip ' zip

Items in *italics* are non-standard.

Notes:
[1]Can pass **script** parameter, Conquest-style script to be applied to each image. Requires script access.
[2]Must pass **target** parameter, AE to send to.
[3]Can pass **setvalue** parameter to set value of progress indicator.
[4]Queries support **limit** and **offset** parameters as well as {attributes}

The DICOMWeb api is used by these applications (code provided):

http://localhost/api/dicom/test.html Limited test script for the API
http://localhost:8086/api/dicom/test.html Same built-in

http://localhost/app/ohif OHIF embedded viewer 1.03
http://localhost:8086/app/ohif OHIF embedded viewer 1.03
http://localhost/app/ohiftop OHIF viewer, more recent
http://localhost:8086/app/ohiftop OHIF viewer, more recent

OHIF can be configured to link to an API on another server by changing, in **index.html** for app/ohif or **app-config.js** for app/ohiftop:

```
wadoUriRoot: '/api/dicom/wadouri',
qidoRoot: '/api/dicom/rs',
wadoRoot: '/api/dicom/rs',
```

http://localhost/app/luiz Demo Cornerstone viewer By Luiz

The original Conquest lua newweb scripted is available through:

http://localhost/app/newweb Lua based Conquest web interface
http://localhost:8086/app/newweb Lua based Conquest web interface

app/newweb if configured through **config.php** and **dicom.ini**:

```
$exe  = 'servertask -p5678 -q127.0.0.1'        // sets port and IP of Conquest
$userlogin = false;                            // uses single file login system
$wplogin   = false;                            // uses Wordpress login system
```

and

```
admin_password  = password
readOnly = 0
viewOnly = 0
viewer   = wadoseriesviewer
studyviewer = wadostudyviewer
```

Functions in newweb are enabled/disabled by: Change,Move,Store,Zip,Delete access.

A.2 AE SPECIFICATIONS

A.2.1 AE1 Specification

This Application Entity provides Standard Conformance to the following DICOM v3.0 SOP Classes as an SCU:

SOP Class Name	SOP Class UID
Verification (Echo)	1.2.840.10008.1.1
* Unknown IOD Storage	* See note

NOTE: This MicroPACS will initiate outgoing DICOM C-STORE requests masquerading as any stored IOD module. The behavior of this outgoing association link will be like the DICOM defined SCU role: Storage Service Class.

This Application Entity provides Standard Conformance to the following DICOM v3.0 SOP Classes as SCP:

SOP Class Name	SOP Class UID
Verification (Echo)	1.2.840.10008.1.1
Patient Root Query/Retrieve Info. Model -FIND	1.2.840.10008.5.1.4.1.2.1.1
Patient Root Query/Retrieve Info. Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2
Patient Root Query/Retrieve Info. Model - GET	1.2.840.10008.5.1.4.1.2.1.2
Study Root Query/Retrieve Info. Model –FIND	1.2.840.10008.5.1.4.1.2.2.1
Study Root Query/Retrieve Info. Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2
Study Root Query/Retrieve Info. Model - GET	1.2.840.10008.5.1.4.1.2.2.3
Patient Study Only Query/Retrieve Info. Model -FIND	1.2.840.10008.5.1.4.1.2.3.1
Patient Study Only Query/Retrieve Info. Model - MOVE	1.2.840.10008.5.1.4.1.2.3.2
Patient Study Only Query/Retrieve Info. Model - GET	1.2.840.10008.5.1.4.1.2.3.3
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18
StorageCommitmentPushModel	1.2.840.10008.1.20.1
Modality WorkList Query	1.2.840.10008.5.1.4.31
* Unknown IOD Storage	* See note

NOTE: This MicroPACS will accept any incoming DICOM C-STORE request sent using the DICOM defined SCP role: Storage Service Class. The dgatesop.lst file (see configuration section and dicom.ini file) can be used to selectively restrict this ability. The same file can globally disable, e.g. GET access.

NOTE: multiple instance matching is incomplete and should be restricted to a single UID (e.g. SOPInstanceUID).

A.2.1.1 Association Establishment Policies

A.2.1.1.1 General

The DICOM Application Context Name (ACN) that is always proposed is:

Application Context Name	1.2.840.10008.3.1.1

The Maximum Length PDU negotiation is included in all association establishment requests. The maximum length PDU for an association initiated by the AE is:

Maximum Length PDU	32Kbytes

The SOP class Extended Negotiation is not supported and ignored.

There is no limit on the maximum number of Presentation Contexts Items that will be proposed. In this implementation, each Abstract syntax will be proposed with either a single Transfer Syntax, or with a few JPEG(2000) transfer syntaxes, depending on the configuration in *acrnema.map*.

The user info items sent by this product are:

- Maximum PDU Length
- Implementation UID
- Implementation Version

Note: Max PDU length is not configurable at run time.

A.2.1.1.2 Number of Associations

MicroPACSMain AE will initiate one DICOM association to perform image store for each concurrently incoming C-MOVE request.

There is no artificial maximum placed on the number of simultaneous DICOM associations open at one time. It should be noted that system response time will be degraded, and this could possibly adversely effect a time-out period on other remote AE's.

The Print Management function will correctly handle multiple simultaneous associations, but the elementary print support in the CONQUEST user interface will not correctly print (i.e., images on the pages will be mixed up) when multiple print jobs are sent simultaneously.

A.2.1.1.3 Asynchronous Nature

Asynchronous mode is not supported. All operations will be performed synchronously.

A.2.1.1.4 Implementation Identifying Information

The Implementation UID allows unique identification of a set of products that share the same implementation.

The Implementation UID for this ID/Net v3.0 Implementation is:

Storage & Q/R UID	1.2.826.0.1.3680043.2.135.1066.101

A.2.1.2 Association Initiation by Real-World Activity

A.2.1.2.1 Proposed Presentation Contexts

Presentation Context Table – Proposed					
Abstract Syntax & configuration		Transfer Syntax		Role	Expanded Negotiation
*Unknown	un,as,n1..n5, uj,nj	Little Endian	1.2.840.10008.1.2	SCU	None
*Unknown	j3..j6	JPEGBaseLine1	1.2.840.10008.1.2.4.50	SCU	None
*Unknown	j3..j6	JPEGExtended2and4	1.2.840.10008.1.2.4.51	SCU	None
*Unknown	j5	JPEGSpectralNH6and8	1.2.840.10008.1.2.4.53	SCU	None
*Unknown	j6	JPEGFulllNH10and12	1.2.840.10008.1.2.4.55	SCU	None
*Unknown	j2	JPEGLosslessNH14	1.2.840.10008.1.2.4.57	SCU	None
*Unknown	j1, j2	JPEGLossless	1.2.840.10008.1.2.4.70	SCU	None
*Unknown	jk	JPEG2000 Lossless	1.2.840.10008.1.2.4.90	SCU	None
*Unknown	jl	JPEG2000 Lossy	1.2.840.10008.1.2.4.91	SCU	None
*Unknown	js	JPEGLS Lossless	1.2.840.10008.1.2.4.80	SCU	None
*Unknown	j7	JPEGLS Lossy	1.2.840.10008.1.2.4.81	SCU	None

Note: Due to the morphing nature of the outgoing SSC-SCU engine, the specific Abstract Syntax that is proposed depends upon the nature of the stored image. The actual proposed Transfer Syntaxes depend on the configuration in *acrnema.map* and are the same for each class of stored images.

A.2.1.2.1.1.2 SOP Specific Conformance Statement for Image Storage SOP Class

This implementation can perform multiple C-STORE operations over a single association.

Upon receiving a C-STORE confirmation containing a successful status, this implementation will perform the next C-STORE operation. The association will be maintained.

Upon receiving a C-STORE confirmation containing an Error, Refused or Warning status, this implementation will fail the specific IOD in question. If more images need to be sent, they can be sent in the same association.

A.2.1.2.2 Association Acceptance Policy

A.2.1.2.2.1 Real-World Activity

Associations will accepted/rejected based on AE and SOP in dgatesop.lst (when no AE's are listed it allows all, when 1 or more listed only those listed).

Associations and commands will be accepted/rejected based on IP address through lists of allowed and denied IP addresses set in dicom.ini. DIMSE-C commands by default are allowed by all IP addresses.

This AE accepts associations for the Query/Retrieve (Q/R) SOP using the Patient Root, Study Root, and Patient/Study Only Query Model.

This AE accepts associations for the Image Storage Class using any defined IOD class.

This AE accepts associations for the Verification Service Class.

This AE accepts associations for the Print Service Class.

This AE accepts associations for the WorkList Query Service Class.

A.2.1.2.2.2 Real-World Activity

This AE is indefinitely listening for Q/R, Storage Class, Verification and Print Management associations. Called and Calling AEs can be whitelisted in dgatesop.lst. If none are whitelisted all are accepted. Then the connecting IP address is checked against a list of Allowed and Denied IP addresses defined for each DIMSE operation and private server task specializations.

Security. From version1.5.0g, default all are allowed for: Cverification, Cfind, Cmove, Cget, Cstore, Cmovedest but can be restricted to listed IP addresses and ranges.

For example to only allow C-GET and C-Move from a certain address range add to dicom.ini:

AllowedIPsCget = 192.168.0.*,127.0.0.1
AllowedIPsCmovedest = 192.168.0.*,127.0.0.1

Each DeniedIPs OR AllowedIPs line can contain a comma separated list of IPv4 addresses or ranges. List entry forms accepted: 1.2.3.4 - exact Ipv4, 192.168.1.* - legacy IPv4 wildcard, 192.168.1.0/24 – Ipv4, * - everything, none – nothing.

A.2.1.2.2.3 Proposed Presentation Contexts

Presentation Context Table – Accepted					
Abstract Syntax		Transfer Syntax		Role	Expanded Negotiation
Patient Root Query/Retrieve Info. Model – FIND	1.2.840.10008.5.1.4.1.2.1.1	Little Endian	1.2.840.10008.1.2	SCP	None
Patient Root Query/Retrieve Info. Model – MOVE	1.2.840.10008.5.1.4.1.2.1.2	Little Endian	1.2.840.10008.1.2	SCP	None
Patient Root Query/Retrieve Info. Model – GET	1.2.840.10008.5.1.4.1.2.1.3	Little Endian	1.2.840.10008.1.2	SCP	None
Study Root Query/Retrieve Info. Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Little Endian	1.2.840.10008.1.2	SCP	None
Study Root Query/Retrieve Info. Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Little Endian	1.2.840.10008.1.2	SCP	None

Study Root Query/Retrieve Info. Model – GET	1.2.840.10008.5.1.4.1.2.2.3	Little Endian	1.2.840.10008.1.2	SCP	None
Patient/Study Only Query/Retrieve Info. Model – FIND	1.2.840.10008.5.1.4.1.2.3.1	Little Endian	1.2.840.10008.1.2	SCP	None
Patient/Study Only Query/Retrieve Info. Model – MOVE	1.2.840.10008.5.1.4.1.2.3.2	Little Endian	1.2.840.10008.1.2	SCP	None
Patient/Study Only Query/Retrieve Info. Model – GET	1.2.840.10008.5.1.4.1.2.3.3	Little Endian	1.2.840.10008.1.2	SCP	None
Modality WorkList Query	1.2.840.10008.5.1.4.31	Little Endian	1.2.840.10008.1.2	SCP	None
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Little Endian	1.2.840.10008.1.2	SCP	None
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	Little Endian	1.2.840.10008.1.2	SCP	None
StorageCommitmentPushModel	1.2.840.10008.1.20.1	Little Endian	1.2.840.10008.1.2	SCP	None
*Unknown	*Unknown	Little Endian*	1.2.840.10008.1.2	SCP	None
Verification	1.2.840.10008.1.1	Little Endian	1.2.840.10008.1.2	SCP	None

Note: Due to the morphing nature of the incoming SSC-SCP engine, the specific Abstract Syntax accepted will depend upon the nature of the stored image, and the dgatesop.lst configuration file (of which a default version is automatically created when installing the Conquest DICOM server).
*The server can accept many transfer syntaxes as configurable by *dgatesop.lst*.

A.2.1.2.2.4 SOP Specific Conformance for Query/Retrieve/Get FIND SOP Class SCP

The C-FIND response status values are supported as defined in DICOM v3.0 Part 4.

All Required (R) and Unique (U) Study, Series, and Image Level Keys for the Patient Root, Study Root, and Patient/Study Only Query/Retrieve Information Model are supported. Many optional (O) Keys are supported, as described later in this document.

A.2.1.2.2.5 SOP Specific Conformance for Query/Retrieve/Get MOVE SOP Class SCP

Prioritization of C-FIND & C-MOVE requests is all set to normal - 0.

All images requested in a single C-MOVE will be sent over a single association (the association will not be re-established for each image).

A.2.1.2.2.6 SOP Specific Conformance for “Unknown” Storage SCP

The specific Storage SCP classes accepted are programmable (by the user) at runtime, and cannot be explicitly stated here.

No optional elements are discarded.

The duration of the storage is temporary. Least recently added patients are deleted when the disk space is less than the amount specified in the “Cleanup disk space below (MB)” field in the Conquest DICOM server. This amount is run-time configurable. When the DICOM server is connected to a, e.g., jukebox archival system, the duration of storage can be made permanent.

A.2.1.2.2.7 Presentation Context Acceptance Criterion

No criterion.

A.2.1.3 Transfer Syntax Selection Policies

The server can accept most transfer syntaxes as configurable by *dgatesop.lst*. Outgoing connections can be made over uncompressed, loss-less or lossy JPEG(2000) transfer syntaxes. If so, the images are recompressed to conform to the accepted transfer syntax. The configuration is done through *acrnema.map*. Lossy compression configuration settings like j3 and jl may be followed by a 2 digit quality percentage factor. Note that the effect of this quality factor differs between jpeg and jpeg2000.

Configuration	Proposed transfer syntaxes	Name
un[1], as[2], n1..n5[3], nj[4], uj[4]	1.2.840.10008.1.2	ImplicitLittleEndian
ub	1.2.840.10008.1.2.1/2	ExplicitLittle/BigEndian
ul	1.2.840.10008.1.2.1	ExplicitLittleEndian
u2	1.2.840.10008.1.2.2	ExplicitBigEndian
j1	1.2.840.10008.1.2.4.70	JPEG Lossless sv1
	1.2.840.10008.1.2	ImplicitLittleEndian
j2	1.2.840.10008.1.2.4.57	JPEG Lossless sv 6
	1.2.840.10008.1.2.4.70	JPEG Lossless sv1
	1.2.840.10008.1.2	ImplicitLittleEndian
j3, j4 (or e.g., J380 for 80%quality)	1.2.840.10008.1.2.4.51	JPEG extended (12 bits)
	1.2.840.10008.1.2.4.50	JPEG baseline (8 bits)
	1.2.840.10008.1.2	ImplicitLittleEndian
j5	1.2.840.10008.1.2.4.53	JPEG spectral selection
	1.2.840.10008.1.2.4.51	JPEG extended (12 bits)
	1.2.840.10008.1.2.4.50	JPEG baseline (8 bits)
	1.2.840.10008.1.2	ImplicitLittleEndian
j6	1.2.840.10008.1.2.4.55	JPEG progressive
	1.2.840.10008.1.2.4.51	JPEG extended (12 bits)
	1.2.840.10008.1.2.4.50	JPEG baseline (8 bits)
	1.2.840.10008.1.2	ImplicitLittleEndian

js[5]	1.2.840.10008.1.2.4.80	JPEGLS Lossless
j7[5] (or e.g. j780)	1.2.840.10008.1.2.4.81	JPEGLS Lossy
jk[5]	1.2.840.10008.1.2.4.90	JPEG2000 Lossless
jl[5] (or e.g. jl80)	1.2.840.10008.1.2.4.91	JPEG2000 Lossy
j#3,50[7]	1.2.840.10008.1.2.4.57	Truncate all pixels below e.g. 50 to 0, scale by e.g. 3 then compress by j2 (lossy)
n#2,100[7]	1.2.840.10008.1.2	Truncate all pixels below e.g. 100 to 0, scale by e.g. 2 then compress by n5 (lossy)

Note: The transfer syntaxes are listed in order of priority. I.e., if a host is configured as j1 and it accepts JPEG lossless, the image will be lossless JPEG compressed before transmission, even if it was not stored in that way.

1) un = uncompressed. Images will be decompressed prior to transmission.
2) The configuration “as” will transmit images as-is. Independent of how images are stored on disk (with JPEG or NKI compression), they will be transmitted over an ImplicitLittleEndian connection. This behavior does not conform to the DICOM standard and for many hosts this may therefore not work. NKI clients will work, though.
3) Configurations n1..n5 will transmit images with NKI private compression, which can only be read by NKI clients.
4) nj = nki compressed, leave all jpeg as is; uj = uncompressed, leave all jpeg as is
5) JPEG2000 compression is relatively slow compared to other compressors.
6) JPEG2000 and JPEGLS compression can crash on poorly formatted images in 1.4.19, fixed in 1.5.0.
7) The j# and n# modes are lossy compressors (due to truncation and scaling) and intended for very fast decompressing, e.g., in web viewers; n# uses n5 that maximum keeps 13 bits of the (scaled) data. RescaleSlope is adjusted for the scaling for consistency. In 1.5.0g this compressors does not work for signed pixel values (e.g. enhanced CT)

A.3. COMMUNICATION PROFILES

A.3.1 Supported Communication Stacks (parts 8,9)

DICOM Upper Layer (Part 8) is supported using TCP/IP.

A.3.2 OSI Stack

OSI stack not supported.

A.3.3 TCP/IP Stack

The TCP/IP stack is inherited from the Windows/Linux operating System. (Conquest addition): We have used the excellent Delphi TCP/IP components from François Piette (http://www.overbyte.be) in the CONQUEST user interface GUI.

A.3.3.1 API

Developers can base client programs on **TEST.EXE** and **DICOMP.EXE** that are included with source code in the **DICOMLIB** folder file. The actual DICOM server (with many options) is **DGATE.EXE** that is included with source code in the release file . Source code of the Windows user interface, client DLL (used for queries only) is included. Developers can also add scripts in Lua or a limited private scripting language for several core server tasks to provide extensive processing of DICOM objects such as images and queries, develop web pages or provide batch processing. Lua scripting can be debugged in ZeroBraneStudio.

A.3.3.2 Physical Media Support

Any Windows (Linux) supported physical media.

A.3.4 Point-to-Point Stack

A 50 pin ACR-NEMA connection is not supported.

A.4. EXTENSIONS / SPECIALIZATION / PRIVATIZATIONS

VR (0x7fdf, 0x0010) contains compressed pixel data if NKI compression is used. In the normal configuration, the server will never transmit NKI compressed data, but will compress and decompress the data on the fly. The following presentation contexts have been added to allow NKI private compressed data to be transmitted and to allow retrieval of downsized images for higher speed:

1.2.826.0.1.3680043.2.135.1066.5.1.4.1.2.1.2	PatientRootRetrieveNKI
1.2.826.0.1.3680043.2.135.1066.5.1.4.1.2.2.2	StudyRootRetrieveNKI
1.2.826.0.1.3680043.2.135.1066.5.1.4.1.2.3.2	PatientStudyOnlyRetrieveNKI

These contexts contain sub-classed versions of the standard C-MOVE commands with the following additional optional control parameters (numbers are hexadecimal):

(9999, 0100): MaxVrSize	CMove Do not send VRs larger than this number of bytes
(9999, 0200): MaxRowsColums	CMove Downsize image to maximal this #rows and columns
(9999, 0201): Frame	CMove If given, return only the selected frame of a MF object
(9999, 0202): Scrub	Use to filter contents of dicom object
(9999, 0300): ConsoleText	Text will be printed to server console
(9999, 0400): Silent	If sent, console does not log transaction Also sends servercommand text
(9999, 0401): Payload1	Incoming payload for scripting
(9999, 0402): Payload2	Return payload for scripting from servercommand
(9999, 0403): Payload3	Return payload for scripting by script

(9999, 0404): OddPayload	Send when return payload has odd length
(9999, 0500): MaxSlices	CMove Send at most # slices irrespective of query result
(9999, 0600): MaxCompression	CMove Maximum possible compression NKI client (default 4)
(9999, 0700): Recompression	Recompress style NKI or JPEG (default none)
(9999, 0800): ObjectFileName	returns ObjectFileName of image when queried
(9999, 0801): ObjectMAGDevice	returns Mag Device of image when queried
(9999, 0802): VirtualServerMask	Restrict access to selected virtual servers (default all used)
(9999, 0900): Script	'ImportConverter' with which transmitted objects are processed (requires script access)
(9999, 0a00): MoveOriginatorAE	The outgoing C-MOVE impersonates the passed AE
(9999, 0b00): Split	Controls partial C-move activity
(9999, 0c00): Sort	Controls sorting of query/move/get
(9999, 0c01): Limit	Limits response of query/move/get
(9999, 0c02): Offset	Shifts limited response of query/move/get
(9999,1234): Anonymized patientID	If set, anonymizer uses the contents to set the new patient ID
(9999,9000): Deanonymized patientID	If de-anonymizer stage *, this receives the original patient ID
(9999,9001): Deanonymized Name	If de-anonymizer stage *, this receives the original patient name
(9999,9999): CountOnly	Force query to do count only

A.5. WADO FUNCTIONALITY

Standard WADO functionality is provided through the Conquest web server (see the Windows manual). The WADO interface supports the following keywords

http://127.0.0.1/app/newweb/?
requestType=WADO&contentType=image/gif&studyUID=xxx&seriesUID=yyy&objectUID=zzz)

or:

http://127.0.0.1/api/dicom/wadouri?
requestType=WADO&contentType=image/gif&studyUID=xxx&seriesUID=yyy&objectUID=zzz)

studyUID, seriesUID, objectUID:	to select the object returned
contentType:	to select the way it is returned
image/gif	single or multiframe image
image/jpeg	single frame
image/png	not implemented returns jpeg
image/jp2	not implemented returns jpeg
video/mpeg	not supported
text/plain	returns header as text
text/html	returns header as HTML
application/dicom	returns DICOM object

transferSyntax : DICOM returned uncompressed (default) or compressed with:

1.2.840.10008.1.2.4.50	→ j3 (jpeg)
1.2.840.10008.1.2.4.51	→ j4 (jpeg)
1.2.840.10008.1.2.4.53	→ j5 (jpeg)
1.2.840.10008.1.2.4.55	→ j1 (jpeg)
1.2.840.10008.1.2.4.57	→ j2 (jpeg)
1.2.840.10008.1.2.4.70	→ j1 (jpeg)
1.2.840.10008.1.2.4.80	→ js (jpegLS)
1.2.840.10008.1.2.4.81	→ j7 (jpegLS)
1.2.840.10008.1.2.4.90	→ jk (jpeg2000)
1.2.840.10008.1.2.4.91	→ jl (jpeg2000)

rows, columns	to downsize image
region	to crop image
windowCenter, windowWidth	window/level for gif/jpg/bmp
frameNumber	to select a frame (default first)
anonymize	if “yes” call anonymize_script.cq if “other” calls named anonymizer
annotation	read but not supported
imageQuality	passed to jpeg encoder
charset	ignored for now
presentationUID	ignored for now

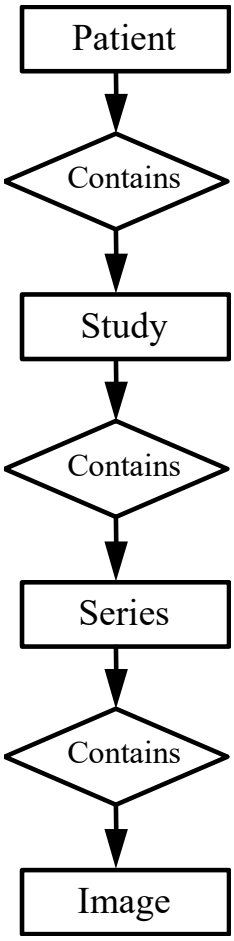
bridge server to access as WADO bridge
bridge default is the current server or taken from **[wadoservers]bridge** in dicom.ini in the web servers *app/newweb* folder

SECTION 3 DEFAULT QUERY/RETRIEVE INFORMATION MODEL DEFINITION

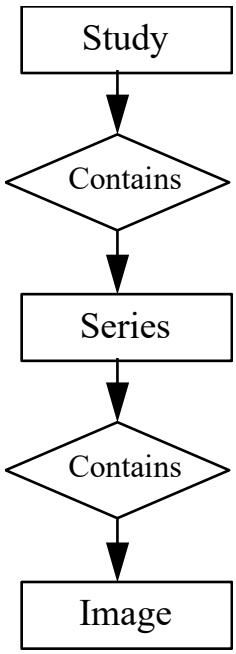
This section describes the subset of the DICOM v3.0 Patient Root, Study Root, and Patient/Study Only, Query/Retrieve Information Model Definition used by this product.

3.0 INTEROPERABILITY SCHEMA

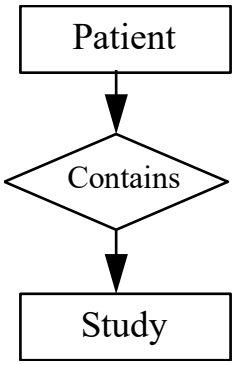
3.0.1 PATIENT ROOT QUERY/RETRIEVE ENTITY RELATIONSHIP



3.0.2 STUDY ROOT QUERY/RETRIEVE ENTITY RELATIONSHIP



3.0.3 PATIENT/STUDY ONLY QUERY/RETRIEVE ENTITY RELATIONSHIP



3.1 ENTITY DESCRIPTIONS

See DICOM Standard Part 4

3.2 PATIENT ROOT QUERY/RETRIEVE INFORMATION OBJECT DEFINITION

3.2.1 Patient Level Keys for Patient Root Query/Retrieve Information Model

Attribute Name	Element Tag	Type	Notes
Revision: 10 (plus computed items)			
Patient Name	(0010,0010)	R	1
Patient ID	(0010,0020)	U	1
Patient Birth Date	(0010,0030)	O	
Patient Sex	(0010,0040)	O	
Number of Patient Related Studies	(0020,1200)	O	Computed* - not database
Number of Patient Related Series	(0020,1202)	O	Computed* - not database
Number of Patient Related Instances	(0020,1204)	O	Computed* - not database

*requires setting EnableComputedFields = 1 in dicom.ini (default on)
Note 1: If setting AllowEmptyPatientID = 1 (default it is 0), these items may be missing on all objects of a study – the system will then not support PatientRoot operations, or on some objects of a study, where the system will update the database appropriately

3.2.2 Study Level Keys for Patient Root Query/Retrieve Information Model

Attribute Name	Element Tag	Type	Notes
Revision: 17 (plus computed items)			
Study Instance UID	(0020,000D)	U	
Study Date	(0008,0020)	R	
Study Time	(0008,0030)	R	
Study ID	(0020,0010)	R	
Study Description	(0008,1030)	O	
Accession Number	(0008,0050)	O	
Referring Physician	(0008,0090)	O	
Patients Age	(0010,1010)	O	
Patients Weight	(0010,1030)	O	
Study Modality	(0008,0061)	O	Multiple entry item, automatically updated by server
Number of Study Related Series	(0020,1206)	O	Computed* - not database
Number of Study Related Instances	(0020,1208)	O	Computed* - not database

*requires setting EnableComputedFields = 1 in dicom.ini (default on)

3.2.3 Series Level Keys for Patient Root Query/Retrieve Information Model

Attribute Name	Element Tag	Type	Notes
Revision: 17 (plus computed items)			

Series Instance UID	(0020,000E)	U	
Series Number	(0020,0011)	R	
Series Date	(0008,0021)	R	
Series Time	(0008,0031)	R	
Series Description	(0008,103E)	O	
Modality	(0008,0060)	O	
Station Name	(0008,1010)	O	
Institution	(0008,0080)	O	
Patient Position	(0018,5100)	O	
Contrast Bolus Agent	(0018,0010)	O	
Manufacturer	(0008,0070)	O	
Model Name	(0008,1090)	O	
Body Part Examined	(0018,0015)	O	
Protocol Name	(0018,1030)	O	
Frame of Reference UID Number of Series Related Instances	(0020,0052) (0020,1209)	O O	Computed* - not database

*requires setting EnableComputedFields = 1 in dicom.ini (default on)

3.2.4 Image Level Keys for Patient Root Query/Retrieve Information Model

Attribute Name	Element Tag	Type	Notes
Revision: 13			
SOP Instance UID	(0008,0018)	U	
SOP Class UID	(0008,0016)	O	
Image Number	(0020,0013)	O	
Image Date	(0008,0023)	O	
Image Time	(0008,0033)	O	
Echo Number	(0018,0086)	O	Multiple entry item
Number Of Frames	(0028,0008)	O	
Acq Date	(0008,0022)	O	
Acq Time	(0008,0032)	O	
Receiving Coil	(0018,1240)	O	
Acq Number	(0020,0012)	O	
Slice Location	(0020,1041)	O	
Samples Per Pixel	(0028,0002)	O	
Photometric Interpret.	(0028,0004)	O	
Rows	(0028,0010)	O	
Columns	(0028,0011)	O	
Bits Stored	(0028,0101)	O	
Image Type	(0008,0008)	O	Multiple entry item
Image ID	(0054,0400)	O	

3.3 STUDY ROOT QUERY/RETRIEVE INFORMATION OBJECT DEFINITION

3.3.1 Study Level Keys for Study Root Query/Retrieve Information Model

Attribute Name	Element Tag	Type	Notes
Revision: 17 (plus computed items)			
Patient Name	(0010,0010)	O	
Patient ID	(0010,0020)	O	
Patient Birth Date	(0010,0030)	O	
Patient Sex	(0010,0040)	O	
Study Instance UID	(0020,000D)	U	
Study Date	(0008,0020)	R	
Study Time	(0008,0030)	R	
Study ID	(0020,0010)	R	
Study Description	(0008,1030)	O	
Accession Number	(0008,0050)	O	
Referring Physician	(0009,0090)	O	
Patients Age	(0010,1010)	O	
Patients Weight	(0010,1030)	O	
Study Modality	(0008,0061)	O	Multiple entry item – automatically updated by server
Number of Study Related Series	(0020,1206)	O	Computed* - not database
Number of Study Related Instances	(0020,1208)	O	Computed* - not database

*requires setting EnableComputedFields = 1 in dicom.ini (default on)

3.3.2 Series Level Keys for Study Root Query/Retrieve Information Model

See Section 3.2.3

3.3.3 Image Level Keys for Study Root Query/Retrieve Information Model

See Section 3.2.4

3.4 PATIENT/STUDY ONLY QUERY/RETRIEVE INFORMATION OBJECT DEFINITION

3.4.1 Patient Level Keys for Patient/Study Only Query/Retrieve Information Model

See Section 3.2.1

3.4.2 Study Level Keys for Patient/Study Only Query/Retrieve Information Model

See Section 3.2.2

3.5 MODALITY WORKLIST QUERY INFORMATION OBJECT DEFINITION

3.5.1 Keys for Modality Worklist Query Information Model

Attribute Name	Element Tag	Type	Notes
Revision: 17			
Accession Number	(0008,0050)	O	Primary Key
Patient ID	(0010,0020)	R	
Patient Name	(0010,0010)	R	
Patient Birth Date	(0010,0030)	O	
Patient Sex	(0010,0040)	O	
Medical Alerts	(0010,2000)	O	
Contrast Allergies	(0010,2110)	O	
Study Instance UID	(0020,000D)	O	
Requesting Physician	(0032,1032)	O	
Requested Procedure Description	(0032,1060)	O	
Requested Procedure Code Sequence	(0032,1064)	R	1 instances of this sequence required
>Modality	(0008,0060)	R	
>Requested contrast agent	(0032,1070)	O	
>Scheduled AE	(0040,0001)	R	
>Start date	(0040,0002)	R	
>Start time	(0040,0003)	R	
>Performing Physician	(0040,0006)	R	
>Scheduled Procedure Step Description	(0040,0007)	O	
>Scheduled Procedure Step ID	(0040,0009)	O	
>Scheduled Station Name	(0040,0010)	O	
>Scheduled Procedure Step Location	(0040,0011)	O	
>Premedication	(0040,0012)	O	
>Scheduled Procedure Step Comments	(0040,0400)	O	
Requested Procedure ID	(0040,1001)	O	
Requested Procedure Priority Character set	(0040,1003) (0008,0005)	O *	 Returned as “ISO_IR NNN” only when WorkListReturnsISO_IR_100 is set to NNN

To code this information into a database, the contents of the sequence are unfolded to the same level as the other fields. *This field will be optionally returned whether requested or not.

4.1 FILES

Installation files (in DicomServer150g.zip):

7za.exe	7-zip command line version
7za.txt	7-zip license text
conquest.service	Linux daemon
ConquestDICOMServer.exe	User interface (Windows GUI)
CqDicom.dll	DICOM client DLL (for GUI only).
dgate.dic	DICOM dictionary for dgate.exe
DgateServ.exe	NT service wrapper for dgate.exe V1.2
DicomConformance_FilesLST_Changes.pdf	This file
linuxmanual.pdf	Linux installation manual
maklinux	Linux build/install script
readme.md	Github readme
sample.hl7	Example HL7 input file
windowsmanual.pdf	Documentation
clibs*.*	location for Lua extensions DLLs 64 bits versions provided for socket, IUP, luafilesytem lunatic python 3.8 bridge; Clibs is used for Lua console and scripting
data*.*	Sample data (two images, jpegls compressed)
extensions*.*	Lua scripts to improve GUI display and print (put in main folder to enable)
install*.*	Lua based installer
installer.lua	Installer for Linux
dicom.ini	Minimal config for service host
linux.sh	Initiates web configuration for Linux
service.lua	Config web page code
windows.bat	Initiates web configuration for Windows
readme.md	Some info
install32*.*	32 bits exe and DLLs
dgate.exe	console mode version of MicroPACS system
lua51.dll	32 bit Lua interpreter
install64*.*	64 bits exe and DLLs
dgate64.exe	Idem for 64 bits (automatically selected)
lua51.dll	64 bit Lua interpreter
linux*.*	Linux configuration and script files
acrnema.map	Default known DICOM providers
console.sh	Runs lua console for database access (Linux)
dgate	Precompiled dgate for sqlite
dgate.dic	Dictionary, same as in main folder
dgatesop.lst	Default capability lists
dgatesop.lst.nojpg	Capability list without jpeg etc
dgatesop.lst.withjpg	Capability lists with jpeg etc
maklinux_precompiled	Used to build dgate as above on Mint14 sytem
prerequisites	Script to install prerequisites
regen	Script to regenerate database (backups sqlite one)
restart	Starts apache2 and conquest in Docker
updatelinux	Builds SQLITE-based server executable
webviewer.sh	Linux web interface, built-in server
various text files with recent or outdated help	
lua*.*	(sample and serious) lua scripts
lua\anonymizer*.*	Sample batch anonymization system scripts
lua\socket	Part of luasocket library
anonymize_script.lua	Anomymizer
anonymize_ukcat.lua	Specialised anonymizer for Christie/UOM

anonymizer.lua	Anomymizer functions
api.lua	Part of luasocket library
association.lua	Sample utilities to be run for every connection
compressiontest.lua	Tests compression
console.wlua	Lua console
csv.lua	csv file parser and writer
deanonymize_script.lua	De-anonymizer
FixRTDicom.lua	Restore broken links in RT objects
inflate.lua	Pure Lua unzip library
json.lua	JSON parser
ladle.lua	Built-in web server
ltn12.lua	Part of socket library
livecoding.lua	Example suited for zerorbrane studio live coding
makefilename.lua	Sample lua to name stored DICOM objects
metadicom.lua	Print, copy, compare DICOM objects by piece
mobdebug.lua	Debugger from Zerobrane studio
movepatientsfromlist.lua	Sample move script
niftydicom.lua	DICOM to Nifty conversion
niftyutil.lua	DICOM to Nifty conversion – utilities
notepad.wlua	Example lua run environment
overview.lua	Overview of us of most lua server commands
persistence.lua	Utility script to load and save tables
print.lua	Sample GUI independent print server
query.lua	Sample query script
quitladle.lua	Forces ladle to stop
rclient.lua	Bridge to R
readkeys.lua	Sample utility for key translation in anonymizer
simple_compressiontest.lua	Tests compression
Rtest.lua	test for R bridge
test_databases.lua	Test all databases
test_servercommand.lua	Tests most server functions
test_utilities.lua	Tests utilities
ukcat.cfg	Christie/UOM anonymizer settings
ukcat_namer	reads Postgres table for ID translation
src\dgate*.*	Sources to compile for Linux
webserver*.*	Used to install web apps and api's
cgi-bin	Obsolete CGI interface and demos
cgi-bin\viewers	scripts to drive various web viewers
iframe_starter.lua	Study level conquest viewer, series in iframe
papaya_starter	Series level Papaya viewer (3D)
wadoseriesviewer.lua	Standalone HTML5 Conquest series viewer
wadostudyviewer.lua	Standalone HTML5 Conquest study viewer
wadoviewerhelp.lua	For HTML5 Conquest series viewer
weasis_starter.lua	Starts Weasis at series or study level
htdocs\api\dicom	QIDO/WADO api
htdocs\app\newweb	PhP and lua based server web pages
htdocs\app\luiz	Cornerstone viewer by Luiz Oliveira
htdocs\app\ohif	Demonstration of conquest OHIF integration
htdocs\app\ohiftop.7z	Demonstration of updated OHIF integration
htdocs\papaya	Papaya viewer, can be called from newweb
htdocs\weasis	Placeholder for Weasis viewer (3.0 up)
dgate.php	PhP bridge to to newweb
config.php	Its configuration
singlefilelogin.php	Login screen by Panique
conquest.jpg	Conquest logo
ZeroBraneStudio*.*	integration files for the ZeroBraneStudio IDE
conquest.lua	Code completion file
conquestdicomserver.lua	Interpreter (link between ZBS and Conquest)

conquestdicomutil.lua	Other interpreter – can run without server
install.lua	Automatic Install script
readme.txt	Some information
wordwrap.lua	Extension to turn wordwrap on and off

Configuration files (automatically generated):

dicom.ini	Configuration file
dicom.sql	Database table definition file
acrnema.map	System/IP map file
dgatesop.lst	SOP Class definition file
USE…..	Determines database driver is installed

Database files (automatically generated, example for SQLite):

data\dbase\conquest.db3	Database tables (SQLite)
data\dbase\XDicompatients.dbf	extract of database table used by browser for dbaseIII
data\dbase\XDicomstudies.dbf	extract of database table used by browser for dbaseIII
data\dbase\XDicomseries.dbf	extract of database table used by browser for dbaseIII
data\dbase\XDicomimages.dbf	extract of database table used by browser for dbaseIII
data\dbase\XDicomworklist.dbf	extract of database table (not used)
data\printer_files	temporary and printer files
data\printer_files\querycache	optional cache for repetitive queries to virtualservers
data\incoming	folder – monitored for data to load if present

Log files (automatically generated):

Installation.log	logs from installation page
Maintenance.log	logs from maintenance page
ServerStatus.log	logs from server status page or service
PacsTrouble.log	relevant errors from server status log
PacsUser.log	all users who accessed the server
ConquestDicomServer.log	log about main actions and server start/stop
logs\logs_yyyymmdd.zip	automatically zipped set of log files

Data files (automatically generated – 5678 is the servers port #):

ExportFailures5678_0	data of failed exports for later retrying
CopyFailures5678	data of failed mirror copies for later retrying
DelayedFetchForwardFailures5678	data of failed delayed forwards

Note: The server deletes these files (or delete manual) to abort retrying

Database backup files

backup\SERVER_d_datetime.bak	daily backup
backup\SERVER_w_datetime.bak	weekly backup
backup\SERVER_m_datetime.bak	monthly backup

Image file (example, for FileNameSyntax parameter set to 3) :

|Dir| PatientID | seriesUID |series| slice | time | counter

Data\QA_phantom\1.2.840.113619.2.22.287.1.19980710.202026_0001_000006_9537982720005.v2

4.2 PRODUCT INTERACTION / DESCRIPTION

dgate.exe*: DICOM MicroPACS AE Main. This is the principal PACS application. It handles all connections (see threading model note in section 4.4 of this part). Contained in this executable are verification, storage, print, and various query and retrieve DICOM SOP classes. This executable interfaces to the PACS database via ODBC, MySQL or Postgres drivers, or using a built-in SqLite or dBaseIII driver. In the event that disk space is low, it will optionally delete least recently entered patients. This application also contains code for installation, maintenance, and archival operations that is used by the Conquest DICOM server. For these purposes a second copy of dgate.exe is started. Type "**dgate -?"** for more information.

Then dgate.exe can send commands to a running Conquest PACS using dgate – commands. Then dgate.exe can interpret lua scripts in itself (dgate –dolua:) or trigger the server to do so (dgate –lua: and dgate –luastart:).

Finally, the same executable may act as CGI/WADO server application. In some rare cases, the dgate process may still be running even though the user interface has closed (after a crash or after killing it with the task manager). The user interface, when restarted, then assumes that the dgate process belongs to a service (and displays "**user interface"** in the caption), but cannot control the running process. Killing the dgate process with the task manager or rebooting will solve this problem. All source code of dgate.exe in included in the zip file. To compile dgate.exe one can use total.cpp (documentation included). A new Github repository is available for 1.5.0 up.

dgate64.exe Identical application for use in a 64 bits windows OS. Dgate.exe or dgate64.exe are automatically selected. Delete dgate64.exe to force use of 32 bits in a 64 bit OS. At least one of dgate.exe or dgate64 must be present.

dgate.dic*: DICOM dictionary used by dgate.exe. Must be present.

dgateserv.exe: Optional wrapper (V1.2) for dgate.exe to make it run as a Windows service. May be used (advanced users only) to manually (even remotely) start / stop / install / uninstall service(s). Type **"dgateserv /?"** for more information. Note that DICOM server services are named after the AE of the server. Once dgate.exe is installed as a service, the DICOM server(s) starts automatically when the computer is booted. When the user interface is started it will detect that the server is already running and connect to it. Source code is not included. Service install for Windows7 requires running the server in administrator mode.

conquestdicomserver.exe:
This executable is the user interface and installation program and contains parts of the print server. See the installation

section of this document for its functions. This file is optional, the server can also run without a GUI.

cqdicom.dll: This is 32 bits code for the DICOM client. It is used here to initiate query, move, command and other actions from the GUI. This file is not needed if the GUI is not used.

7za.exe: 7-zip command line version: used by the server core to unzip dropped zip files with dicom files, to zip log files, and to zip dicom data sets for submission over ssh-2.

Servertask.exe Small executable to send commands to a running Conquest server. Is used by the DICOMWeb api. Is largely compatible with dgate.exe itself when used as a client.

These files are generated by the GUI on install:

dicom.ini* Configuration settings. File must be present but does not need to conatin all settings.
acrnema.map* List of known DICOM providers. The file must be present but may be empty of no C-MOVES are used.
dicom.sql* Database table configuration. This file must be present if the database is used on if dicomquery is called from a lua script.

*Mimimal set of files for a server without a GUI.

Old web server (place minimally these files marked with * in your web server):

cgi-bin/Dgate.exe*: exactly the same dgate.exe as in the server.

cgi-bin/Dicom.ini*: specialized ini file for server running as web(cgi) client.

cgi-bin/acrnema.map* List of known DICOM providers (may be in dicomserver folder).
cgi-bin/dicom.sql* Database table configuration. (as above).

htdocs/ActiveFormProj1.ocx: Optional ActiveX web viewer, to be registered manually or downloaded from your web server and installed.
htdocs/conquest.jpg: Icon for use on the web pages

cgi-bin\samples*.*	sample web scripts
cgi-bin\OpenClinica*.*	scripts to drive an OpenClinica – PACS coupling
cgi-bin\viewers*.*	scripts to drive different web viewers
cgi-bin\clibs*.*	lua extensions used by lua scripts run on the web server
cgi-bin\newweb*.*	Fully lua scripted web interface (now default)
cgi-bin\service*.*	Fully lua scripted web installer

New web server:

/webserver/htdocs

.htaccess	rewrite rules
singlefilelogin.php	simple authentication system by Panique
conquest.jpg	logo
ladle_routes.lua	routing rules for Ladle (built-in web server)

/webserver/htdocs/api/dicom

.htaccess	rewrite rules
config.php	config for Conquest connection, authentication
index,php	root php script
posters.lua	conquest server-side scripts for posting information
posters.php	webserver scripts for posting information
qido.php	webserver scripts for query
Router.php	general purpose PHP router
rquery.lua	conquest server-side scripts for queries
servertask	conquest bridge app (Linux)
servertask.exe	conquest bridge app (Windows)
test.html	small test page
wado.php	WADO bridge

/webserver/app/ohif

.htaccess	rewrite rules
index.html	root page & configuration
ohif1.03_min.js	Embedded OHIF viewer

/webserver/app/newweb

.htaccess	rewrite rules
config.php	config for Conquest connection, authentication
index,php	root php script
dgate.dic	DICOM dictionary
dgate.exe	conquest bridge app
dicom.ini	webserver configuration
index,php	root php script
start.lua	root lua script
csv.lua	to read comma-separated files
json.lua	to read/write json data
*.lua	additional pages

4.3 THREADING ARCHITECTURE

The MicroPACS system was designed to run in two multithreading models. The first model is “Multithreaded”, the second is “Multiprocess”. The Multithreaded model can best be described as a monolithic application. Each incoming DICOM association is allocated a separate thread of execution within the same memory and address space of the master process. These threads share the same code within the single (monolithic) executable. The Multiprocess model is similar to "inet" on UNIX operating systems. There is a controlling application (conquestdicomserver.exe) which handles incoming TCP/IP connections. For each connection, a new copy of the MicroPACS main executable (dgate.exe) is loaded and executed. A separate process that runs in a separate address space from all other associations handles each DICOM association.

The multithreaded application is slightly faster than the multiprocess one; But the multiprocess one is more secure, and should be more reliable. Because each process runs in it’s own address space, an association from one connection cannot corrupt or undermine (in any possible way) another simultaneous association. For this reason, the default installation of the MicroPACS was the multiprocess model.

However, extensive testing of the Conquest DICOM server showed that the multiprocess version sometimes failed to work correctly on Windows (some

ODBC problem). For this reason, the multithreaded version is currently used with the Conquest DICOM server. Several fixes have increased its speed and made it very reliable.

Also, the built-in DBASEIII driver applies in-memory indexing and depends on the server process staying in memory to achieve a high speed. In the Linux version, the built-in DBASEIII driver, SqLite, PostGres and MySQL are the database drivers available.

APPENDIX 1.

Fixes, modifications and extensions of MicroPACS by Marcel van Herk and Lambert Zijp of the Conquest project:

DICOM.SQL (Database definition):

19980624	StudyNumber (StudyID in DICOM) is now 64 long Required for correct operation with SQL server
19990109	Made imagenumber 10 characters wide
19991222	Moved MODALITY to the series level (for DICOM-RT)
19990315	Added EchoNumber and NumberOfFrames in image table
20010830	Revision to 4, extended database significanltly
20010416	Revision 5: Added patientID in series and images for more efficient querying
20010416	Revision 6: Added frame of reference UID in series table
20020519	Revision 7: Added ImageType in image table, StudyModality to 64 chars, AcqDate to SQL_C_DATE
20021028	Revision 8: Denormalized study table (add patient ID, name, birthdate) to show consistency problems. Revision 9 is a further de-normalized version that is used with the built-in DbaseIII driver.
20030319	Revision 10: Fixed width of ReceivingCoil: to 16 chars
20030907	Note: revisions 9, 11 and 12 refer to the ODBC-less version
20040402	Revision 13: Added ImageID to image database
20040905	Revision 14: Added WorkList database with HL7 tags
20080124	Revision 15: Added patient position to denormalized image table for built-in DBF driver');
20080124	Revision 16: Moved Stationname and InstitutionalDepartmentName to series table');
20080818	Revision 17: EchoNumber, ReqProcDescription to 64 characters; StudyModality, EchoNumber, ImageType to DT_MSTR; use Institution instead of InstitutionalDepartmentName'); Revision 18: DT_STR can now be replaced by DT_ISTR to force case insensitive searches
20200110	Revision 19: Use QRows and QColumns as field names

DGATE.CPP (main of DGATE.EXE):

19980327:	Disable logfile for speed and save disk
19980327:	-! Enables logging to Personal pacs console; RunServer works; -p breaks
19980327:	All printf's to systemdebug
19980320:	Integrated dumppacs code here for convenience
19980320:	Fixed -p option; SaveToDisk returns filename, printed in stats
19980320:	Documented and added print of usage (-? option)
19980404:	Added test options, ODBC config option and command line specified console pipe / udp logging
19980409:	added FileCompressMode option; use local save to disk code instead of pdu member
19980409:	Return on failed GenerateFileName in SaveToDisk
19980409:	Cleaned up NKI private compression code and allow >15 bit differences

19980410: Added run length encoding for equal pixels to compressor; fix 3-byte case

19980415: Cleaned up the messages; -! does not enable debug; do not enable accessupdates (use aroute)

19980618: Some work on manual and database layout listing

19980621: Added -z option: zap patient

19980624: Comm test also produces systemdebug and long text output; added \n to some output

19980625: SaveDicomDataObject in loadddo.cpp supports NKI private compression

19980704: Added some test code for counting disk space and renaming device for patient

19980705: Added CACHE devices in free store check; added FindPhysicalDevice (searches for file)

19980709: Added archiving options: -as, -au, -ab, -ac, -ad

19981217: Temporary use PDU.Save... code for testing DICOM objects (does not compress)

19981218: Temp use Pdu.Load as well (no compression)

19981228: Disabled ljz's code until it has been completed

19990108: Reenabled ljz's code: Replace uncompressed by compressed pixeldata VR in SaveToDisk (it seemed to work anyway...)

19990109: Removed some commented out code; added comments for alternative load and save routines. Added Regen of specified device

19990110: Added n, for MAGn, as parameter in -as and -ab archiving options (default all). Use exit(1) on failure

19990111: Fixed exit code on -ar option

19990117: If the filename is *.dcm (depends on FileNameSyntax) use uncompressed chapter 10 format

19990317: Added NKI-private stuff

19990628: Temporary enabled debug in -!nnnn option

19990630: Added MIRROR option; disabled debug in -!nnnn option

19990707: Fixed MIRROR option; added MIRROR message; added check on FindPhysicalDevice result

19990817: Added ability to spawn ExportConverters at the end of SaveToDisk

19990827: Optimized read of slices: cache a DB to pass to GetFileName (10% faster)

19991117: Added parameter FileCompressMode to in nki_private_compress call

20000318: Added private command object 9999, 0300 = print to console
Added private command object 9999, 0400 = force C-Echo to be 'silent' (no log). Display C-Move Destination; print time info about threads

20000323: Serious fix: MainThread 'hangs' when several associations occur simultaneously, caused by compiler-optimization. Solution: DriverApp.Lock should be 'volatile'.

20000329: On request by ljz: designed crash of server if silent VR receives ‘DEAD'

20000501: Compare dicom modality with UPPER-case ini-file setting (ExportConverters)

20000621: Initialize TroubleLogFile and UserLogFile; log C-STORE and C-MOVE

20000703: Logging of trouble now starts with '***'

20000703: Exclude archival messages from trouble log; removed force dcm code

20001104: Added WINAPI to thread routines

20001105: Replaced malloc by new where a mix could occur (vr->data) Made compilable for MSC and BC and WC using some #ifdefs Changed order of verification and store; better localized new/delete DDO more

20001106: Run-time load odbcinst routine for BC and WC, use spawn... i/s/o _spawn...

20001106: Use delete [] operation for vr->Data

20010328: Added -av: verify mirror disk

20010415: Added DeleteSeries, DeleteStudy and DeleteImage routines and -f options

20010416: Added -f options: -feFile = enter MAGN file into DB, -fdFile = delete file from DB -faFile = add (also makes copy) file into server, -f?=ask UID of file, -fu = generate UID, -fcNEWPATID,file = modify patient ID of image file (moves file!). NOTE: -fc is irreversible in the sense that if a portion of a study/series is changed and changed back it winds up as a different study/series. This occurs because the UIDs must be changed for each image modification. This problem does not occur when a whole series or study is changed

20010417: Simplified code to change uids to allow easy extension to referenced SOPs. Check after load on common UIDs to avoid accepting dropped non-dicom files. NOTE: ChangeUIDinDDO should also change sequences and referenced SOPs (0008,1155)

20010418: Fix in above change

20010418: Changed names of database fields in UIDMODS - did not work on MsAccess

20010419: Added -fk option: copy image file to other patient ID (as -fc but no delete). Added version number 1.3.9 to command line help

20010429: Added -fz option: zap file from server and database

20010430: Some work on read ahead thread: note that thread must not use any pointer copy!

20010502: Made read ahead thread working; fixed thread counter; fix odbc option: strings too short

20020506: Fixed handle leak in read ahead thread

20020507: Fixed memory leak in read ahead thread; kbhit() test #ifdef DO_LEAK_DETECTION

20010509: Added RenameDevice is -ae option

20010730: Replaced parameter argv[0] of ExportConverters to proper value.

20010829: Added ExportStationName as export filter; default Export... value set to "*"; Made export comparisons case insensitive; added special 'forward to AE' ExportConverter; Version to 1.3.10

20010831: Added extended syntax for exportconverters with %f=filename, %m=modality, %s=stationname, %b=file base name, %p=file path; Also allows 'copy %f destination', but for windows NT only (uses cmd.exe). Added ExportFilter option that uses an SQL statement to filter.

20010901: Added a simple queue to process exportconverters asynchroniously; Create a queue for each converter; queue mirror copy requests

20010902: Added %o = SOP; %n = newline; added the following hard coded converters: append "text" to file; write "text" to file; copy file to file; copy file to dir

20010904: Re-entered change of 20010730

20010905: Fix: After 'SaveToDisk', do not free pDDO

20011109: Fix: made ExportConverter stuff case insensitive
Note: empty filter tests for empty contents - this is not the same as '*'

20011110: Note: in release 1.3.10, the " to " in e.g., write "%f%n" to file must be lowercase

20011115: Made " to" case insensitive; Added *** before some error messages for better logging. Removed cache db: would hang the server if SQL has gone down and up. Now use one DB per thread which is passed to the read ahead thread = fast too!

20011207: Added extra errormessage when creation of datasource fails

20020109: Disabled this code for watcom or borland (instead of run-time loading an address)

20020314: Implemented ignore of C-CANCEL request for ADAC NM (was error before). Blocked out SQLInstallerError call; does not compile on clinical MS4.2

20020413: Added some notes about thread safety and db's: The serverchild is not thread safe when reading and writing is done on the same association.

20020415: Added -atDEVICE option: sanity check of images on disk; version to 1.3.11

20020416: Made UID generator configurable through UIDPrefix in dicom.ini; made time print unsigned

20020422: Sleazy fix of ModifyPatID: time(null) created same UID: now wait 1 s per changed file

20020426: Generate filename no longer gives an error: is done at higher level

20020428: Only serious error messages use *** in message

20020428: Added FAILSAFE_STORAGE: tries to save incoming files even when DB errors occur

20020429: Put SaveToDisk in myUnknownStorage: pass DB failures to caller; Disabled FAILSAFE_STORAGE: any storage failures should now be detected by client

20020508: Do not rewrite image not on MAG but it is not an error (warning is generated earlier)

20020520: Added -gSERVER,DATE option: grab images on date from remote server

20020521: fix displaying junk filename when rewriting image not on MAG

20020522: Fix in SetStringVR: strings must be padded with a space

20020529: -i and -r now have mode parameter (0=normal and default, 1=simple, e.g., for DBASEIII)

20020531: In 'QualifyOn', support case-sensitive call to 'GetACRNema', but make AE-Title uppercase after retrieving IP and port.

20020613: Better handling of Compression ON/OFF in 'SaveToDisk'
Fixed crash in DeleteImageFile (twice free of VR->Data)

20020613: compress to specified mode, check (de)compress result, decompresses data before forward; added 'export compressed to AE' export; -fa has optional ,NEWPATID syntax;
20020802: Simplified rmdir code and allow multiple subdirectories in rmdir and mkdir code. Version to 1.3.12 (unreleased)
20020804: Use PATHSEPCHAR where possible
20020807: Changed SaveToDisk order: only make patientdir when DB save succeeded
20020812: Added skeleton of printer support
20020816: Added color imagebox; Save incoming print DDO as file
20020819: UIDs of imageboxes end on rows.cols.position for easy print handling
20020819: Fix in delete unexistent mirror files for changepatientUID Extract pixel data from sequence in ImageBox; added sleep(10) in -fk option
20020819: Added better UID generation (but gets close to 64 chars)
20020821: Fix printer UID generation; display page orientation and film #; shorter info
20021016: Added (indexed) patid to exportfilter query and getfilename for speed; The option tests for rev5 db or higher; increase 64 strings to 66; Note: GrabImagesFromServer option does not yet pass patid to the query (i.e., will be slow with non-odbc driver)
20021017: Control NeedPack from here; added -c option: set UID counter at startup. Removed Sleep from anonimize options; do not re-create UIDMODS
20021018: Pass NoKill through GenerateFilename for interactive DGATE
20021028: Fix query on study in PatientStudyOnlyQuery (did an image query)
20021105: Revamped read-ahead thread logic to try fix rare crash where ratd->DDOOutPtr became NULL
20021115: Use Generic style retrieve classes with NKIqrsop code instead of older qrsop code. Advantages: read ahead thread used, and allows print of error messages from C-MOVE. Required changes such that ratd->pcdo can be NULL.
20021121: Disabled read-ahead thread for time being
20021212: Also loop ServerApp.Server(Port) in threaded mode server
20021213: Re-entered fix by Hanne Kooy: compressed forwarding had extra ;
20021213: Re-enabled use of generic query classes with read-ahead thread; but made read-ahead thread configurable with “EnableReadAheadThread". Made grab query faster by including date - note grab is independent of FixPhilips
20021215: Found read-ahead thread problem reported by Aaron Cann - missing Sleep in wait for slices
20021223: Version to 1.4.1 pre-release; added in dgatefn forbidden filename chars suggest by Thomas Buerer
20030113: Removed loop ServerApp.Server(Port): gave endless loop error messages
20030120: Added cleanup-code when DO_LEAK_DETECTION is defined for easy leak checking
20030205: Fix bug found by Frank-Andre Siebert: read ahead thread crashed when ID or SOP is missing. Also fix 2 other potential missing VR problems

20030228: Fixed bug reported by Jeff Babcock: series retrieve from E-film crashed (patid not passed)

20030424: Changed calls to obsolete PDU.Write(&DDO). In 'SaveToDisk' the call to PDU.SaveDICOMDataObject now has parameter DICOM_CHAPTER_10_EXPLICIT (which writes IMPLICIT files if not compressed)

20030606: Fixed incremental counter when creating UIDs or generating filenames Fix: QueryRetrieveLevel is mandatory for a QueryResponse

20030625: Fix NGET of BasicPrinterSOPClass

20030625: Fix in above fix

20030627: Adapted for MSC4.2; Finally really fix NGET of BasicPrinterSOPClass (wrong UID used)

20030629: Added -nd, -nc, -jd and -jc options: (de)compress NKI; (de)compress JPEG (used OFFIS executables)

20030630: Started on compression for dropped, incoming, transmitted; NKI vr 0x9999,0x700=custom compression. Added 'forward compressed as xx to ...'

20030701: QualifyOn now also has compression parameter

20030703: Moved compression code to nkiqrsop; dgate -j-xx and -j*xx = test compression options. Removed "forward compressed to" because "forward compressed as .. to" is better. Note that FileCompressMode is now obsolete. KNOWN BUG: JPEG compressed images may be rewritten as V2 (when written originally as NKI) which are then not correctly read.

20030704: Made that FileCompressMode parameter still works even though is obsolete. Moved faulty delete DDO after SOPUnknownStorage.Read

20030705: Added check of Tranfer Syntax next to extension for save type; ProcessDDO takes **DDO

20030706: Use dgate.dic; Attach VRType to PDU's for implicit little endian support; small fix in dump code

20030709: Printer support fix; version to 1.4.2; Added SendUpperCaseAE parameter (default 0)

20030730: Force ImplicitLittleEndian, ExplicitLittleEndian and ExplicitBigEndian objects that must be stored in Chapter10 format, to ImplicitLittleEndian.

20030815: Version to 1.4.3

20030905: Allow longer filenames

20030910: Added check on rights to write (trouble) log file and printer_files in MAG0

20030921: Allow write to any MIRROR if MAG is full; added -ff# option: delete until # MB free

20030922: Added StorageFailedErrorCode (default 0x110 = 272 decimal = failed processing)
Added ExportCallingAE and ExportCalledAE export filters (also %u=SCU, %c=calledAE in converter)

20030401: Version to 1.4.4; pass status pointer to compress routines

20040402: Delete DDOptr when SaveToDisk cannot write but does not give an error; Added "Cannot rewrite jpeg/rle image in v2 format" check; Use system DSN for ODBC (easier login)

20040406: Always use EXPLICIT syntax for jpeg, fix v2 always use DUMP

20040426: Version to 1.4.4a

20040520: Version to 1.4.4b
20040523: Added patient ID to speed GetFileName for single slice move
20040528: Set NeedPack (controls DbaseIII indexing) for regen, archive, maintenance; Version to 1.4.4c
20040528: Added built-in maintenance commands through silent VR in ECHO; pass patid in DeleteImageFile
20040530: extract (DBF only) to database like XDicomImages in same directory; Version to 1.4.5
20040601: Added deletestudy, deleteseries and packdbf maintenance commands
20040602: Fix: 'forward compressed as' always failed
20040605: packdbf maintenance command sets NeedPack to 3: forces pack
20040606: fix rewrite to not MAG (JUKEBOX) was NOT ignored
20040607: Merged fix ljz 20040602; do not allow rename and delete with empty name
20040610: Added maintenance server tasks for archival and regeneration
20040612: Added indexdbf maintenance server task
20040614: dgate command line maintenance options use NeedPack=5: non-threaded index generation. Added -am option: move(all) device data; for selected data use -amMAG0.Archiving,MAG1
20040624: Version to 1.4.5a
20040626: Pass study and series UID to getfilename; version to 1.4.5b; Fixed leak of pats array
20040713: Version to 1.4.6
20040805: Fix in C-MOVE for single file (from jlz); version to 1.4.6b
20040909: Increased length of ExportFilter (was 64, now 510)
20041020: Added mergeseries(file) and mergestudy(file) maintenance commands, silenttext to 1024
20041101: Added deletesopfromdb maintenance command; version to 1.4.7
20041103: called, e.g., AE~nj overrides IncomingCompression to nj
20041108: Added $c test compression mode (alt-drop files with $c as patient ID tests compression modes)
20041109: Added $tSERVER test compressed forward; some fixes in forward compressed to (server name read wrong)
$s tests all filename syntaxes
20041112: Added $rN N times repeated entry test, and $tN which enters image N time each on its own thread
20041128: Added -^file: log to file (timestamped) instead of to server console; -#file: same with debug
20041129: Added silent commands debuglog_on and log_on to set logging to UDP or file; Added silent command read_amap to re-read acrnema.map without restarting the server
20050102: Small modifications to allow compile through total.cxx
20050107: Added code to hold and retry queued forwards and mirror copies when failed: After failed export/copy, start storing entries in file ExportFailuresN (CopyFailures). If a new export/copy is requested >1 minute after last failed one, try again; if queue is empty, >100 seconds after last fail, try export/copy stored ones. Processing queued entries has priority over processing stored entries.
20050107: Version to 1.4.8; modifications for linux compile
20050108: Added server PORT# to fail files, so that multiple servers on different ports do not share files

20050109: Added configurable TCPIPTimeOut, FailHoldOff, RetryDelay and QueueSize

20050109: Adapted thread code for linux; still need to implement WaitForSingleObject

20050111: Added ctype.h (for mingw)

20050118: Linux: crudely implemented WaitForSingleObject; detach pthreads to avoid leaks; crudely implemented export converter apps

20050119: Added grabimagesfromserver, regendir and makespace server commands; dgate -- sends server commands to other running server; adapted manual

20050121: Small updates to manual

20050124: Replaced BackGroundExec with simpler system() for Linux; added query server command, e.g., dgate "--query:DICOMpatients|patientid,patientname,patientsex|patientsex='F'|%s %s %s|t.t"; Added read_ini: server command to reread dicom.ini; changes most config except: TCPPort (busy), UseBuiltInDecompressor (cached) and FileNameSyntax (cached)

20050130: added get_param, get_freestore, get_amap, get_sqldef that respond through echo-response; also: get_sop, get_transfer, get_application, get_localae, get_remoteae, get_dic, forward. added: dump_header (to file), convert_to_gif (to file); adapted query (to file) where file="cgi" for stdout in cgi/mime mode, file="" to send to stdout as is; most GUI commands can now pass PatientID|SOPInstanceUID instead of filename of dicom object; added put_amap, write_amap, put_sop, put_transfer, put_application, put_localae, put_remoteae, put_param. Note: get/put_param work through disk (read_ini activates), get/put_amap through memory (write_amap writes to disk), get/put_sop etc read from memory and write to mem and disk.

20050204: Added delete_param, delete_amap and fix cgi out (double \n)

20050204: most GUI commands can now pass PatientID|?*:SOPInstanceUID; added delete sop etc commands
More fixes in cgi data passing VR vr() is mostly wrong; use VR *vr=new VR()

20050205: Allow up to 16 output fields in query:, repeat queried fields over all 16 outputs. Added counters for server status; start on display_status server command

20050206: More work at display_status, renamed testtable to xtesttable: default not opened. Access ObjectFile and DeviceName through query instead of with GetFileName up to 3 x faster!! Also fixes potential leak in read ahead thread: pats, series and studies not always freed. Allow up to 32 cgi query outputs, tidied dump layout, start on web interface (put dgate and ini in cgi-bin)

20050207: Added query2 option: limits number of output rows as asked; gui command not counted as association. Some more work for web interface

20050210: Adapted web interface queries such that they run on sql server

20050212: Removed need for thread local storage; automatically adapt dgate extension in cgi scripts depending in OS

20050213: Added more parameters to server configuration web page

20050214: Added update button to server config (updateconfig page to be implemented)

20050215: Fix in LoadForGUI: Drag 'n' drop of files in the server did not work anymore. Fixed dgate crash in case of failure in 'recompress()' (pDDO=NULL when OFFIS failes). Merged

20050327: Added rudimentary gz unzip support for dropped files (uses 7za.exe)

20050401: Start on Modality WorkList Support

20050404: List End/Start sequence db types (only supported for worklist)

20050411: Fix incorrect space after filename and device in C-MOVE internal query

20050414: Added addrecord server command: for now only option to enter worklist entries

20050603: Fix servercommand query(2) for empty where part

20050825: Fix web interface queries for sql server (were OK for dbase)

20050826: More work on web interface and added worklist there; deleterecord command

20050827: Fixes in addrecord and query commands, editworklist,saveworklist,deleteworklist

20050829: More fixes in web interface, disable caching for most/all? of it

20050831: Allow command line length of up to 4096, allow edit all worklist database fields

20050901: Removed invalid cache-control: cache; added WorkListMode:0= off, 1=optional, 2=compulsory

20050902: Read db config for worklist edit page in web interface; use generic webpages for db edit. Added HL7Tag in DumpDD

20050903: Added 'simple' loadhl7: server task implementation and HL7->DICOM translation. Also addimagefile will enter HL7 files into the server, i.e., drag and drop works
Fix some web queries for sql server with denormalized tables

20050904: Some more tweaks to hl7 code; max query formats to 48; max format to 8192

20050905: Auto split HL7 subfields and repeats without using a list

20050907: Merged change by Hans-Peter Hellemann: fixes extension problem for linux web interface for some browsers

20050908: Protect convert_to_gif when file not found

20051121: Recompute SQLResultLength because it does not work in PostGres BindField

20051123: put in #ifdef POSTGRES

20051208: put in #if 0 (fixed in cpp); start on virtual server: will grab images from other server as needed in read-ahead thread: when in db but not on disk; for now use R.A.T also for single image access to avoid code duplication

20051209: Start on virtual query: image (!) query is passed to other server, results populate db

20051210: Added "vX" incomingcompression (stores dbf but not image; forwarding disabled). Added virtual queries on all queries and moves: now works as transparant file cache. Added VirtualServerFor0..9 configuration entries: server merges own data with these AE's. Added CacheVirtualData control; if set data not deleted after use (db kept for now)

20051211: Fix: override query level in virtual query

20051212: Store virtual server # in device; saved on query, used when retrieving, stripped when storing

20051214: Use different sleep lenghts under linux - not all sleep(0); small fix in virtual server

20051215: Implemented a linux version of Sleep using nanosleep

20051217: Use new VR::ReAlloc method to replace data in VR; added quit: command

20051218: Use ReplaceVR instead of Push in anonymize etc; also changes in sequences. Version to 1.4.10; show version and exe date in startup log. Do not start mirror copy queue unless it is needed; show some thread startup info. Added -b = NOTHREAD: run server as single process, useful for debugging and profiling. Fixed doc of --regendir: command

20051219: Fixed several small leaks - as tested with Linux malloc_stats

20051222: Started on bypass server for virtual query - not functional yet (cleanup required)
Removed debugVR logic: errors should now list DCO

20051228: Fix virtual device logic for VirtualServerFor0;
Cleanup vr's and duplicates when bypassing server for virtual query, seems functional

20051229: NonDestructiveDumpDICOMObject now also list sequences; DebugLevel>0 lists DCO, >1 lists query DDO; fixed leaks in virtual query and some others

20051230: Added --debuglevel: command, small fix in NonDestructiveDumpDICOMObject

20060103: Small fix in virtual query; disabled virtual query for worklist; debuglevel 3 shows some query results

20060123: Added patient/study/seriesfinder (server parameter ignored for now, later for virtual servers etc)

20060125: Added serieslister (server parameter ignored for now, later for virtual servers etc)

20060128: Renamed to imagelister, added serieslister

20060131: Sort filenames from imagelister on ImageNumber (0020,0013)

20060226: Version to 1.4.11

20060228: Small fix in isxdigit thanks to ljz

20060311: Use ReplaceVR in virtual query - level was sent twice (thanks David Lang)
Added WEBReadOnly flag

20060317: Support calledae and callingae in filenamesyntax - for virtualquery called is always MYACRNEMA

20060324: Strip group 2 from outgoing c-stores if not compression "as" or "is"

20060328: Improved forwarder, always propose Verification and use IsAbstractSyntaxAccepted(iUID) to test if host accepts image

20060402: Fix hang condition when a file failed to read in the read-ahead thread

20060402: Do not remove transfer syntax prior to dcmdjpeg/dcmcjpeg (here in test recompress only)

20060405: Tried fix for multiple moves on same assoc (thanks Andrej Savelov)

20060405: Added message when IOD fails to read

20060603: Fix crash when started as dgate -v: empty statbuf

20060607: Finally fixed multiple moves on same assoc (thanks Andrej Savelov and Fred Röhner)

20060618: Renamed dfilecopy and define ODBC_ADD_SYS_DSN if needed

20060619: Set version to 1.4.12alpha1

20060621: Added clonedb: command; transfer FULL db from other server to this one using virtualquery

20060628: AddToDatabase has JustAdd parameter: skip one unnecessary query

20060701: Speeded filter string handling

20060702: Pass DB to GenerateFilename to avoid zillions of db open and closes

20060704: Print number of records found in all queries

20060708: Set version to 1.4.12alpha

20061126: Moved servertask temporary files to MAG0/printer_files; protected query: and query2 against empty input

20061126: Experimental forwarding on same association: close unused association after 5 seconds. Clean collected sopclasses after one hour of inactivity. Note 1: there is a problem with AReleaseRQ: do not use in this task; Note 2: maximal 20 forwarders have a remaining association

20061127: Added ForwardAssociationLevel (PATIENT, SERIES, STUDY, IMAGE, SOPCLASS; default STUDY), ForwardAssociationRefreshDelay (default 3600 s), and ForwardAssociationCloseDelay (default 5 s).
Limit maximum number of ExportConverters to MAXExportConverters=20 (for static arrays used in forwarders). Forwarders keep association open as long as UID at ForwardAssociationLevel does not change. Show filename in forward log; document where fixkodak should operate for virtual queries

20061128: Added ForwardAssociationLevel GLOBAL: use association until timout or incompatible
Close ForwardAssociation after send when ForwardAssociationLevel is IMAGE

20061129: VirtualServerForN may be "server,FIXKODAK" to clean queries (add 0) and their response (remove 0)
Hardcoded filters for exportconverters (modality, called, calling, station) can now match e.g., RT*

20061130: Pass series and study in virtualserver outgoing c-move

20061213: Fixed nasty bug in query2 and TestFilter: Query without bindfield overwrites previous bound strings!
Maybe was problem causing crash on linux with query2: and problem with option -g reportedly stopping incorrectly

20061219: Version to 1.4.12

20061231: Added ForwardAssociationRelease to allow testing reconnect problem (default 0 = just hangup)

20070103: FixKodak blocks *xxxx wildcard virtual queries on date (not allowed in Kodak)

20070103: Version to 1.4.12b; start on ImportConverters e.g., <set 0008,1040 to "%V0008,0080">

20070104: ImportConverters %QP %QS %QE %QW; <destroy> <delete xxxx,yyyy> <save to filename>
Added %% and %i to Export and Import converters

20070105: <set 0008,1040 if "...">, <setifempty 0008,1040 to "...">, <setifempty 0008,1040 if "...">
Import/export converters only report when syntax OK and report when action is void

Added %Vxxxx,yyyy to export converters and %d(date/time) to import and export converters
An import/export converter can thus be used to extensively log incoming images
Added import converters: <stop>, <if "string">, <ifempty "string">, <nop> (also export)
Added general purpose variables x, y, z (read as %x, %y, %z) to import converters; Definition of number of ImportConverters now unnecessary. Note: importconverter and exportconverter strings may be changed run-time in dicom.ini

20070105: Some fixes in dgate --archiving options manual; fixed dgate --restoremagflags:

20070107: Fix web access broken by change in odbci for dbaseIII; query must now always include spaces around =

20070113: Do not store NKI compressed data in v2 format: decompress and give error message
Recompress to NKI format now enables StripGroup2; Tested with $c server debug command

20070117: Allow multiple rules per Export or ImportConverter separated by ; and zero or more spaces
<nop> statement prints itself on console: useful for logging anything that follows

20070117: Now maintain multiple connections per ExportConverter line (max 20x20 forwards); Added <stop>, <silentstop>, <if> and <ifempty> to ExportConverters; but they only affect single rule (while these would cross over to the subsequent rules in ImportConverters)

20070122: Now also show free space on mirror devices

20070123: Fixed TestFilter for patientid with '

20070125: Removed <if> and added <ifnotempty>, <ifequal>, <ifnotequal>, <ifmatch>, <ifnotmatch>, <ifnumequal>, <ifnumnotequal>, <ifnumgreater>, <ifnumless> as im/exportconverters
Added %xxx[first,last] substring operator; and protect it against overrange
<ifxxx> no longer crosses over importconverters; added {} block for im/exportconverters
E.g.: ifequal "%V0008,0020[0,3]", "2004"; { forward to CONQUESTSRV3; forward to CONQUESTSRV4; } nop test
Note: 1) all (also ifxxxx) statements end with ; 2) statements may begin with { or };
3) extra spaces only allowed after ;{} and single space after ,

20070127: Fix {} in exportconverters. Release 1.4.12b to fix more or less critical odbci error

20070131: Fix in TestFilter (quotes double); Version to 1.4.12c

20070201: Added <storage MAGn> import converter: sets device to store this (new) image to (default MAG0). Fixed importconverters stop and destroy: did not break current line

20070204: Added extra format starting with # to ImageFileLister: e.g. # %s:%s prints MAG0:filename

20070206: Added create database: dgate -esapw name user password

20070207: Fix query string bug on applyworklist found by capolan1

20070207: dgate -e name root <blank> works for mysql: root is used as admin and login

Also implemented dgate -esapw name sa sapw where sapw may be empty

20070210: Added CheckDuplicates to UpdateOrAddToTable; added @ in imagefilelister: replace \ by /
Start on ocx based viewer integrated in cgi interface; used dicom over http:
Small change in gif export; added * as separator in query/2

20070211: Added WebScriptAddress (default http://server/cgi-bin/dgate), WebMAG0Address (defaults http://server/mag0)
and WebServerFor (default 127.0.0.1). Fix in cgi query parser: now loads dsize and size correctly
Version to 1.4.12d

20070212: Added WebCodeBase, show version in status_display, added config of which dicom server the web server connects to, added [webdefaults] section, added iconsize parameter

20070213: Added : as format in imagefilelister: use to list pat:sopuid
Fixed sorting problem by using adapted imagefilelister for seriesviewer; Fixed default for WebCodebase; Version to 1.4.12e; Use correct case of sql table names in cgi interface: required by mysql on linux; Unsolved: n3 does not always decompress correctly in dview.pas see p20401977:i47, changed default to n4

20070215: Fixed logging and added *** Association rejected message when association is rejected

20070304: Added <defer> exportconverter: retry later as if connection unavailable

20070305: Note: n3 problem fixed in dview.pas, version to 1.4.13alpha; Allow merging of up to 1000 UIDs: set SilentText to 64000 and *uids[1000] (thanks mp); Allow named pipes for log_on and debuglog_on

20070307: Work on extending extract: allow e.g. SQlite -> dbaseIII

20070308: Made changes for big endian and Apple's DARWIN

20070314: Finished extract: allow e.g. SQlite -> dbaseIII in directory MAGO dbase

20070315: Merged DARWIN stuff; Set TCPIPTimeOut for PDU that moves images

20070316: Display defer import converter; Clumsily added <compression> import converter and improved <storage> import converter; Made <storage> thread safe. Failed recompress() no longer reason to fail drag and drop; add convert_to_bmp. Use | instead of , to separate patientid from file in addimagefile:
Distributed , code to each of the server commands to make it more , safe. Note: it is NOT a good idea to use a , in a flexible filenamesyntax. Added level & window to convert_to_gif and convert_to_bmp; longer log lines for dump VR

20070317: <prefetch> using new prefetch_queue, mayprocess and into_queue_unique, <preforward>, <preget>

20070324: preget now <preretrieve> and avoids looping by checking orgmessageid!=0xfbad I.e., data collected by <preretrieve> does not go through import/exportconverters. Added delayed exportconverters <forward patient>, <forward study>, <forward series> with optional compression
Removed "forward compressed to" (without as section) as is never used. Version to 1.4.13beta; delay to 10 minutes

20070326: Fixed leak in <forward patient> etc. preretrieve also checking orgmoveae

20070330: Change by Mark Pearson: read dicom.ini from same dir as exe in unix mode; merged more Darwin stuff. Also taken over bcb's fix for the finder: studymodality was asked at patient level. Also put in a more ENxxxx as command and messageid

20070404: Added CommaInFilenameWorkAround()

20070407: Use reentrant ctime_r when available; moved static SOPPatientRootQuery etc to stack to fix reentrancy problem: concurrent outgoing c-move of CT and MRI on different associations would share PDU causing sopclass not accepted on one. Also seems to reduce linux crash problems on multiple inbound (4 or more) C-stores. Also moved CreateBasicFilmSessionRequest etc to fix potential reentrance problem for printing.

20070410: Merged CommaInFilenameWorkAround()

20070413: "extract:" will just create dbase III clone of full patient DB; added "prefetch" server command

20070415: Added Prefetcher option to dicom.ini: is set will aggresively preread queried patient or studies

20070416: Prefetcher prints more information; use windows calls in windows for faster preread

20070705: extract: uses DT_DBASEIIINOINDEX to disable indexing and packing when extracting from e.g. sqlite to dbaseiii
Note: extract: non dbaseIII goes to MAG0\dbase, dbaseIII goes to DataSource

20070706: Added <between "9", "17"> (9:00 to 16:59) or <between "17", "9"> (17:00 to 08:59) import/exportconverter

20070709: Fixed print of clone db done

20070720: Fixed problem where waiting "forward ... to " task caused high CPU load

20070901: Added dgate --checklargestmalloc:

20071027: Added ForwardCollectDelay for delayed forwarding (default 600 sec)

20071030: Fill in called and calling AE for SaveToDisk for e.g., dropped files etc. Fix %u and %c in Export and ImportConverters: called and calling AE. Log flow control Export and ImportConverters only in debug mode. Added retrying to delayed forwards or prefetches

20071102: SetDicomErrorHandler: orderly shutdown of server on serious DICOM library errors. Fixed a bug in ForwardAssociationLevel: last UID was lost when reading INI file to szTemp. Added MaximumExportRetries and MaximumDelayedFetchForwardRetries (default=0 is no maximum)

20071103: Version to 1.4.13; defer resets queue fails -> keeps on retrying

20071104: Use local as AE for imagelister in web page instead of CONQUESTSRV1; Enable remote servers (use AE instead of 'local') in finder and lister commands; Fix crash when dgate --option gets empty filename: now lists to stdout

20071114: Put --checklargestmalloc: in dgate -?

20071118: Adapted for 64 bits (use SQLLEN for BindField)

20071120: Fixed KodakFixer for empty patient ID (crashed on 64 bits only). Added [modality xx] and [date yyyymmdd-yyyymmdd] clauses to export [patient|study|series] to AE

20071121: Added %V*GGGG,EEEE: search VR in any sequence; version to 1.4.13a; Added [now -ddd+ddd] and [age -ddd+ddd] clauses to export [patient|study|series] to AE. No retry on remote dicom error in forward xxx to: would retry zero records response
Use study date for data, age and now clauses

20071123: Made forward command case insensitive; added forward image; added get [patient|study|series|image] from AE. The latter option makes preretrieve obsolete

20071124: Added [sop xxx] clause to [forward|get]. Reorganized exportconverter code: all converters now do % substitution; reduced code duplication. Added reading of sequence items like in %V/300c,0060.0/0008,1155 or %V/300c,0060/0008,1155; Real life example (must all be one one line, max 512 characters):

```
ifnotequal "%m", "RTPLAN"; stop;
nop "tests modality = RTPLAN";
        ifnotequal "%V*300a,00b2[0,1]", "A2"; stop;
nop "test machine name = A2";
        forward to XVI_A2;
nop "forwards the current recieved RTPLAN";
        get study modality CT from NKIPACS;
nop "collects associated CT";
        get study modality RTSTRUCT sop
V/300c,0060.0/0008,1155 from NKIPACS;
nop "collects associated RTSTRUCT";
        forward study modality CT imagetype *AXIAL* to
XVI_A2;
nop "forwards associated CT";
        forward study modality RTSTRUCT sop
%V/300c,0060.0/0008,1155 to XVI_A2;
nop "forwards associated RTSTUCT";
```

20071125: Fixed syntax for %V/gggg,eeee.i/*gggg,eeee (search all groups under a specified one)

20071126: Start on StorageCommitment (unfinished)

20080103: Switched to ms7 compiler; fixed forward and get date, modality, sop filters: would not supress the UIDs

20080107: Fixed malformed web viewer header: worked for IE but not for other browsers. Check presence of dicom.sql in web pages that need it. Deal with spaces in patient IDs in web pages

20080126: Check presence of dgate.dic when starting server

20080129: Fix KodakFixer: wrote one byte outside VR data (pr)

20080129: Added [imagetype xxxx] clause to [forward|get] (pr)

20080130: Small fix in above

20080205: Added experimental PadAEWithZeros flag; version to 1.4.14alpha

20080210: Added experimental IgnoreOutOfMemoryErrors;
Added "delete [patient|study|series|image] [date yyyymmdd-yyyymmdd] [now -ddd+ddd] [age -ddd+ddd]
[modality mm] [sop xxxx] [imagetype xxxx]" export converter

20080221: Added [seriesdesc xxxxx] filter and "process [patient|study|series|image] [by command]"

20080222: Small fix in imagetype filter code; process by clause not part of unique check

20080302: Fixed case of DICOM table names

20080316: Added dgate --deletestudies:date(range) and dgate --movepatient/study/studies/series

20080318: Added [series xxxx] and [study xxxxx] filters; work on web page --deleteseries/study and --moveseries/study allow patid:uid as parameter; Web interface can now push and delete on series and study level, but delete is disabled in readonly web interface; Version to 1.4.14beta

20080319: Delete in browsers fixed?; added %v(desc)desc: search VR in given sop of same patient. Example: %V(/300c,0060/0008,1155)/3006,0010/3006,0012/3006,0014/0020,000e Gives referenced CT series UID in referenced structure set from forwarded RTPLAN

20080321: Fixes in browser; added graphic web setting; may be gif or bmp for now; Fix %V for non-existing items

20080322: Added dgate --anonymize that uses general scripting

20080323: Small fix in (local) for DcmMove: overwrote destination

20080404: Fixes in series and study filter (rethink naming); added value* match for in match() routine

20080618: Added extra logging in IARQ()

20080620: Only show extra logging in IARQ when assoc rejected

20080816: IARQ shows which sops are accepted; and differentiates no sop from connection terminated

20080817: Small layout fixes; <process with> import converter; show PDU length in log. Check saving of file succeeded (thanks Jeff Bellamy and Alberto Smulders)

20080819: Added experimental DT_MSTR: multi-value entry, e.g. query on 'PET' matches 'PET\CT'

20080819: added --get_ini_param (same as get_param) and get_ini_num to list parameter by index

20080819: Added get_ini to list all parameters in DICOM.INI

20080819: Added code by map but kept original get_param for old web cgi client compatibility; Version to 1.4.14

20080820: Solaris 10 fixes, and general UNIX fixes (map): configfiles may not be in current dir

20080821: Default of ForwardAssociationRelease to 1; added sleep export converter

20080823: Added study UID search to PatientStudyFinder; fixed DcmMove: would call local when remote addressed; Added rudimentary query/move web pages

20080825: query/move looks better; added "thumbs" column to local series lister; config patched to readonly; added background color and display of icon (to be placed in WebCodeBase)

20080826: One more fix in DcmMove, still called wrong server sometimes Do not use 0xfbad as message ID for DcmMove from web page; webreadonly defaults to true; CGI viewer configurable: seriesviewer, seriesviewer2, noviewer, aiviewer

20080827: Added slice number and repeat output data in ImagefileLister and SeriesUIDLister for more flexible formatting; Added flexviewer: reads code from dicom.ini in web server directory

20080831: Translate yyyy and yyyymm to date range in finder; further only accept valid date and date ranges; Added dgate --get_amaps:

lists all non wildcard entries from acrnema.map; Fixed handling of patient ID with spaces in ImageFileLister mode :; All undefined cgi modes can come from the cgi dicom.ini; added special and cgi script variables; Lines can start with -- to start dgate, with # as comment, any other passed as HTML; Added source parameter: flex pages can be read from script file; Added serversideviewer: requires javascript only, nothing to install

20080901: Fixed some leaks in printing and --commands; fixed --get_ini: formatting

20080902: Added header option for web scripts; added some CGI environment variables

20080905: Made new changes for big endian and undid some old ones.

20080908: Index in filelister format is now a string (%s), and added next string that gives index+1 (is1); Fixed manual of --modifypatid: and --anonymize:; dicom mime to application/dicom; Added modes imagelisthttp, imagelisturls and imagelistfiles; added ? format for imagelister: gives #files

20080909: Added studyuid option to moveseries; pass it studyuid in seriesmover call from seriesfinder; Added --modifyimage:file,script (uses import converter scripting language, where you can use ' instead of ")

20080910: In modifyimage only replace ' with " conditionally; version to 1.4.14a;

20080910: Forbid patid, studuid and seruid change in modifyimage; medged bcb Mac stuff

20080913: Modified and use SetStringVR to correctly send UIDs with padded 0

20081016: Show bitness on startup

20081104: Attach dictionary to DcmMove PDU

20081105: Fixed display of bitness in web page

20081116: Adapted for very large objects (use unsigned int for length); remove extra 0 byte in HTML generator; fixed CheckLargestMalloc

20081121: Added create database for PostGres

20081123: Skip export converters for dropped, modpatid, modimage, merging

20081124: show database type on startup; Temp version to 1.4.14a1; fix many scripting crashes

20081129: start on better patient ID change: process all UIDs; fix drag/drop error introduced in 1.4.14a1

20081129: Removed double access of SOPInstanceUID in SaveToDisk; fix: do not free ddo after SaveToDisk;
added <newuids> and <newuids except > import converters;
added --genuid, --changeuid and --checksum commands
Version back to 1.4.14a; modifyimage can change patient ID and study/seriesUID if newuids used as well
set can now also work in exactly one deep sequence: set gggg,eeee/gggg,eeee to "string"

20081130: Added --attachrtplantortstruct:planfile,structfile command using script; also --attachanytopatient/study/series
stop now stops one importconverter- not the chain; added <call file> and <return> statements to return from file

	Added optional anonymize_script.cq: overrules fixed anonymizer; added %A = %V but then gives CRC32 of data and %E = %V but gives new UID for given UID
20081201:	added --convert_to_jpg and web page use (experimental)
20081203:	If jpg graphic: list options as jpg, yes, no; fix slice number display is serversideviewer Added frame control to convert_to_jpg etc as l/w/frame; add optional frame control to convert_to_dicom; added frame control in serversideviewer
20090203:	Removed DNS reversing (you can use wildcard AE instead); work on zip loading
20090204:	Finished zip loading (to be tested on linux), uses now waiting BackgroundExec
20090206:	Added QueryConverter0, WorkListQueryConverter0, RetrieveConverter0: can read called (%c), calling (%u), and c-move destination for retrieve (in %s), as well as all data in data object
20090209:	Made compiling under linux
20090211:	Export MyDcmError; only DCM_ERROR_MEMORY is fatal
20090212:	Recoded virtual server (kept old code), to provide better grouping of move requests
20090215:	Added VirtualPerSeries0..9 flags: determines if virtual gets are per image (default) or per entire series
20090216:	Added %Rgggg,eeee: gives restored UID for newly generated one. Prepare for RetrieveResultConverter0
20090411:	Added simple wildcard matching in match(), accept *text*
20090411:	Version to 1.4.15alpha
20090513:	Added CompressionConverter0 .. 9: called from recompress to 's0' to 's9'; Added <fixkodak> and <unfixkodak> import converters; added <after NN> clause to <forward study> etc; Blocked out StorageCommitment
20090514:	%QXgggg,eeee reads aliasfileqX.txt with lines like old<tab>new<return> to map VR to new value
20090616:	Add ^/~ after % command to convert to upper/lowercase, %^ %~ %[; fixed leak when save to sql fails
20090616	Include file stuff; fixes to Unix 7z stuff
20090618	VirtualServerPerSeries is now a limit: if set to N, more than N images go per series
20090620	Version to 1.4.15beta
20090802	Support DCM_ERROR_DEBUG (debug messages from library) that print only if debuglevel>0
20090821	Removed need to specify "delete series modality *" instead of "delete series"; Fixed "process by " command; now uses all command string upto ;
20090824	Version to 1.4.15beta1
20090921	Added extract_frames: command
20090922	Tried to fix <compression> import converter; added <reject> import converter
20090924	Restructured manual; fix crash of studyfinder without search string; Note: on vista, commands like dgate --imagelister wont give large lists (does when piping)
20090926	%t = tab in scripts; fixed failed storage error message; added RetryForwardFailed flag (default 0)
20090929	Added ImportExportDragAndDrop flag (default 0)

20090929	Version to 1.4.15
20090930	Version to 1.4.15a
20091005	Version to 1.4.15b
20091012	Optimized preprocessing of read-ahead thread by saving tt
20091108	Started on <merge study> import converter
20091120	Started on <forward> import(!) converter
20091229	Version to 1.4.15c
20091230	Merged bcb changes: DGATE_VERSION, PATH_MAX, const char, bigendian fixes
20091231	Defined PATH_MAX for Apple's Snow Leopard,endian fixes, & fixed gcc4.2 warnings (char to const char, VERSION, DEBUG and char* to program memory) Added jpeg2k stuff (HAVE_LIBJASPER)
20100111	Merged; but keep cgi formats local (less changes)
20100113	Fixed one signed/unsigned mix in dump routines
20100119	cast %d print to (int), %ud to (unsigned int); one more const issue
20100120	Fixed two const issues detected with ms8
20100122	fixed: %ud should be %u
20100122	DcmMove uses study-root query when UID passed to fix move to osirix from web interface
20100123	Fixed rare crash in function VirtualServer2; started on DT_FL and DT_FD; version to 1.4.16alpha
20100123	Added counters for jpeg2000; put info about jpeg libraries into serverstatus display
20100124	Blocked old VirtualServer(); rephrased cancel message; changeuidback and count_frames commands; Optimized DcmError call to gpps
20100124	Use much faster MyGetPrivateProfileString: profiled as followed: Installed C:\Program Files\Microsoft SDKs\Windows\v6.1\Bin\xperf_x64.msi set _NT_SYMBOL_PATH=e:\quirt\comps\exe\dgate;srv*c:\symbols*http://msdl.microsoft.com/download/symbols; set _NT_SYMCACHE_PATH=C:\symbols; xperf -on latency -stackwalk profile; run dgate; xperf -d out4.etl; xperfview out4.etl; select time range; select trace-load symbols; right click selection; summary table (takes very long the first time - downloads all symbols!)
20100207	Added uncompress command; version to 1.4.16alpha2
20100209	Fixed another rare crash in function VirtualServer2 (thanks PR)
20100227	Fixed Scotts modifyimage problem: http://forum.image-systems.biz/viewtopic.php?f=33&t=2143
20100227	Added -q option to set target address of dgate -- command; version to 1.4.16alpha3; pass DCO also for non-nki clients: used in %s for RetrieveResultConverter; Added more extensive printer activity logging
20100228	Changed HAVE_LIBJASPER to HAVE_J2K so Jasper or OpenJPEG can be used
20100309	Added double parentheses (gcc4.2 Warnings)
20100309	Changed int to unsigned int, commented out unused variables and routine (gcc4.2 Warnings)
20100619	Added #ifndefs and fixed shadowed variables(gcc4.0 Warnings)

20100723	Merged: Reread all changed; agreed with all but two in checklargestmalloc and cgi; 1.4.16alpha4
20100728	Added delete vr's after ->ReplaceVR's
20100815	Merged; version to 1.4.16alpha5
20100815	Fixed bug 32 in t=2127: seriesdesc filter
20100816	Added QueryResultConverter and ModalityWorkListQueryResultConverter
20100816	Fixed bug in VirtualQuery introduced by only partly renaming shadowed variable
20100816	Allow dicom.ini and other files to be moved; fixed / as cmd line option
20100816	removed (a) from #ifndef EnterCriticalSection(a) etc
20100819	Added system export converter; added "get study" etc import converter. Allow "set" in sequence items; Allow "set" to add sequence items.
20100823	Extended virtualservermask; pass server directly to VirtualServer to override server list
20100823	Merged and simplified bcbs basedir code; use exe dir as default basedir; Fixed overlap in ImportConverter number; Made %xyz variables local; Version to 1.4.16beta
20100824	Use dFileSize to test if file is written correctly: catched 0 byte files with full disk
20100827	Fixed two typos in warning fix extract: command
20100901	Fixed empty virtual query sent if no images there
20100905	Removed file functions: now use RecompressFile; document -j* and -j-; WIP: added testmode: function to allow internal file comparison
20100914	Fixed leak in PrinterSupport
20101017	Added MergeSeriesConverter and MergeStudyConverter
20100918	Merged; version to 1.4.16beta2; testmode does not affect LoadForGUI direct filenames; Fixed that changing patid etc in importconverter breaks exportconverter data
20100919	Added <format> clause to <set> importconverter command
20100920	Fixed [,fromend] operator
20100924	Started on error handling in virtualserver
20100925	Fixed problem in <forward> IMPORT converter; only worked as first command in line; SearchDicomObject now checks on buffer overflow; ; # lines are comment in script file; note: <system> converter should run hidden; <call> now passed called and calling
20100925	Version to 1.4.16beta3
20100926	Added <mkdir> and <rm> IE converters
20100927	Added <save frame> and <save bmp/gif/jpg> IE converters, <save to> E converter
20100928	Fixed in delayed <merge>, <delete>; fixed MergeSeriesConverter and MergeStudyConverter crash Fixed 1.4.16beta2 introduced bug: patientid was passed incorrectly into importconverter
20101003	Added seriesdesc filter and script to DcmMerge, script to DcmMove
20101003	--browsepatient command; fixed that split/merge series generated new study
20101003	Version to 1.4.16beta4; merged jd scheduletransfer
20101003	ImageFileLister now internally also takes study and sop

20101003	Added dgate --submit:patid,studyuid,seriesuid,sopuid, username@machine:folder,password; Requires 7za.exe and pscp.exe
20101003	Modified dgate --Scheduletransfer:patid,studyuid,seriesuid, sopuid,username@machine:folder,password; Added IE <submit> command with target and password clause; Added next slice and frame buttons in serversideviewer
20101005	Fixed ? imagefilelister (count), added $ imagefilelister (#frames), started on passing frames to serversideviewer
20101005	Started on WADO
20101006	Enabled WADO; do not try to remove images from failed virtualserver request (double messages)
20101008	Started on rudimentary WADO client (PatientStudyFinder now also lists images)
20101009	Enabled rudimentary VirtualServer for WADO client: loadforgui will try virtualservers
20101009	Tried to speedup query result processsing; implemented POST method (no multipart yet)
20101009	WADO server and client function; upload button, not functional yet as requires multipart parser
20101010	Set default WADO correct for conquest; finished (single file) upload fuctionality;
20101010	Scan incoming folder once per second (thread starts when incoming folder exists on startup); Some fixes in serversideviewer; started on VirtualQueryCached
20101013	Fix : CreateDatabase "root", used UserName as Password for postgres
20101014	Fix in virtualserver for LoadForGUI
20101016	Improved virtualserver for LoadForGUI; Cached queries start to work; virtual queries now return computed fields; use e.g., VirtualServerFor0 = AE,CACHESERIES or AE,CACHESTUDIES
20101017	Added OverlapVirtualGet parameter: controls interleaving of recieve and send of virtualserver (suggest: 16)
20101018	Limited memory use of OverlapVirtualGet, tried out of order processing but this failed; dated folders for querycache; Submit and scheduletransfer call submit.cq if exists to anonymize
20101020	Small fix in querycache: query file sometimes not stored; and study cache did not read date
20101108	Added --loadanddeletedir command
20101116	Warnings
20101120	Fix reading of FIXKODAK in virtualserver if e.g., CACHESERIES appended; merged bcb warnings (and fixed introduced errors); version to 1.4.16releasecandidate; Added warning if cached virtualserver does not provide computed fields; Added NONVIRTUAL flag to allow block recursive virtualserver connections; Do not forward transfer syntax to virtual queries data object
20101121	Fixed NONVIRTUAL flag for non-cached queries if caching is ON; Added dgate --export: command to zip/7z/tar selected data; Added dgate --safequit: command and OpenThreadCount; prepare for ArchiveConverter0 (1900); Show in log when a file is rewritten; Added [wadoservers] section in cgi config; Document ul, ub, and ue in acrnema.map

20101122	Pass script to export: command; added ZIP thread that runs when the system is a service; Fix for spaces in zipfilename for export; background exe for 7za
20101124	Fix compile and 2 warnings for linux; drop zip file extracts with paths to avoid overlapping filenames
20101209	Fixed FIXKODAK parameter detection of virtualservers
20101212	Warn if FIXKODAK paramater set in virtualquery does not match FixKodak global; Fix rewrite message for virtual server data
20101212	Correct file formats listed and accepted for 7za decompression
20101212	Version to 1.4.16
20101213	Implemented NightlyCleanThreshhold here for Linux and Windows (if logging to file)
20101220	newuids will change empty uids into a new one
20101222	Fix for empty cached query that crashed
20101227	Fixed some delete NULL crashes on failures
20101227	Added org clause to forward <compressed as xx> to AE org AE
20101227	ImportConverters now also use ForwardAssociationLevel
20101228	Added \n after cloning db message
20110105	Use MakeSafeStringValues for exact match; Added MoveDeviceScript0
20110105	Added --echo and --selectseriestomove commands
20110105	Version to 1.4.16rc1
20110106	Added --moveseriestodevice; changed --selectseriestomove syntax
20110106	Todo: NightlyMoveSource, NightlyMoveDest, NightlyMoveAmount, NightlyMoveAge, NightlyTestAge
20110106	Version to 1.4.16rc2
20110110	Note: mergestudiesconverter called for series and other way around
20110111	Check for empty patient ID in virtual query and for other empty VRs
20110111	merge study converter merges series: now calls MergeSeriesConverter. Merging studies now calls MergeStudiesConverter
20110111	changed logic of converters passing study or series uid to be consistent
20110111	reject or destroy in merge script stops object from being merged
20110113	fix script clause in merge study, call also tries line in [scripts] in dicom.ini
20110113	Allow script clause without "" as well; unrecognized line attempts call
20110114	"" in script string; script command evaluates string as script
20110115	delete changed UIDs after merge study (remerge will create new series)
20110115	fixed "script" converter and substitution of ""; experimental "lua" command
20110116	fixed error message for incorrect script commands; first lua functions built-in
20110116	SearchDicomObject now supports %VName; allow setting/reading more than 10 sequence items
20110116	The set command now accepts names, e.g., set PatientID to "9999"; nop %VPatientID

20110116	Lua now allows, e.g., Data.PatientID = 'aap'; print(Data.PatientID)
20110117	Started on lua Global, Association, Command
20110118	Primary PDU is Extended to allow embedding lua state in it
20110119	Added a global PDU as script context; associations add new contexts
20110120	Fix in Association.Calling/Called; for now each thread has an isolated lua state. Fix in speed of query results (were all processed by ImportConverter). Added lua startup/command/QueryConverter0 etc; count all threads including gui threads
20110121	Added prefetcherPDU for delayed forwards and such
20110122	Fixed lua print, added lua error handling; added %f %b %p to ImportConverter
20110122	Fixed SearchDicomObject for US,SS,UL,SL tags (note: 'set to' not fixed yet)
20110124	bug fixes in new code; implemented reject in lua
20110125	Put UID changes into debuglog
20110127	Added lua getpixel and setpixel (takes 3-5 microseconds)
20110129	Added lua getrow, setrow, getcolumn, setcolumn, readdicom, writedicom; sd.ddo leaks
20110201	Lua: R/W sequence e.g., print('0 implied', Data.InstitutionCodeSequence.InstitutionName) or Data.InstitutionCodeSequence[2].InstitutionName = 'write for now max one level deep'
20110203	Lua: Unified reading and writing of Data/Command/Sequences; Allow write at any depth in existing sequences
20110204	Allow creating sequence in script and in Lua: Data.xxxx = {}
20110205	Added newdicomobject and deletedicomobject
20110206	Fix for set .. to ""; added set .. to nil for simple VR; create sequence will not overwrite existing sequence; lua web page creation: CGI(), HTML(), <?lua ?> <%= %> source=xx.lua
20110207	Added lua: get_amap(N) -- N starts at 1, dbquery(db, flds, query, sort) { returns table of tables starting at 1)
20110208	lua gc for dicomobject; lua dicomarray and dicomquery; allow virtualquery without setting level in DDO
20110208	1.4.16rc4
20110214	Fixed lua Data access; fixed "" in exportconverter; 1.4.16rc4a
20110216	Fixed calling and called in ExportConverter; fixed %f etc in ImportConverter; mkdir IE converter also creates subdirs; 1.4.16rc4b
20110228	Added Write, Read and Dump methods to lua dicomobject as closure with passed method name
20110320	Fixed Association.Calling in lua; Added RejectedImageConverter0; added t_1500 checks to all queries
20110320	1.4.16rc5
20110326	1.4.16rc6
20110328	Fix crash when setting lua Filename for import file
20110331	Added NoDICOMCheck option: if set, do not stop parsing DICOM stream on error; FlushPrivateProfileStringCache after writing to dicom.ini
20110331	1.4.16
20110404	Fix in CGI behavior for IIS (check REQUEST_METHOD); version to 1.4.16a (unreleased)

20110413	NoDICOMCheck also forces use of sequence enabled reader (allows JPEG compressed V2 file)
20110419	Added lua getvr(Object, g, e), Object:GetVR(g, e), setvr(Object, g, e, data), Object:SetVR(g, e, data); full lua webpage now basically works and gives error messages to web page
20110419	version 1.4.16a
20110501	added heapinfo() in lua; version 1.4.16b
20110502	Made DcmMove almost always work on study level; added lua dicommove(source, dest, obj, patroot) and sql(statement)
20110603	loadkfactor now required for dgate -a commands; added -h option (wait for getkey)
20110604	lua endassociation and clienterror events; added retry command for rejectedImageConverter0
20110604	implemented/fixed size (may be %)/dsize for sliceviewer /serversideviewer/seriesviewer; version 1.4.16c; also allow size=": use original size or 80% for those requiring a fixed size
20110605	Added zip download of series/study through push page
20110606	Added --modifystudy and --modifyseries commands, e.g., dgate "--modifystudy:20000321,,compression j2"
20110628	Set PDU.Link.Connected to FALSE on !PDU.Read(&DCO)) in StorageApp::ServerChild() to avoid subsequent use of a closed socket in AReleaseRQ::Write() and AReleaseRP::Read() in PDU_Service::Close() (called in destructor of PDU_Service)
20110710	Added RejectedImageWorkListConverter0; fixed retry for RejectedImageWorkList and RejectedImage
20110710	Fixed WADO application/dicom mime header
20110710	zip from web page calls zip.cq script on each file; also forces DCM extension
20110710	Fix compile of getch and heapinfo linux
20110710	Version to 1.4.16d
20110904	Clear address (0010,1040) in default anonymizer; Fixed lua deletedicmobject, leak in readdicomobject; Create empty sequence is really empty, # operator for DICOM sequence in lua; Version to 1.4.16e
20110904	Fix read of %i, %s, %m in lua not from ImportConverter; protect getpixel etc against missing pixel data; Fix crash of %QX if file does not exist
20110905	Fixed leak in %QP etc; fixed leaks in ADDO cleaning in web interface
20110906	Added optional script instead of submit.cq to dgate --scheduletransfer: and dgate --submit:
20110907	Added script clause to forward; e.g., forward to PACS001fir org SELF script fixkodak
20110927	Added "crop x1,x2,y1,y2" and "tomono" importconverters
20110928	Added the DEST clause to e.g., "forward to AE org CALLING dest CALLED script nop"
20110930	Fixed crash forwarding from lua; Version to 1.4.16f
20111009	Fixed sequence writing problem; make it one long when first writing; Fixed AliasFile reading issue: i index into command updated incorrectly; Fixed lua dbquery issue due to typo; Added channel clause to forward import converter; use PDU[19,channel] from lua; fix forward org dest clauses; fixed forward to HOST:PORT

20111010	Protect channel clause againt incorrect values; Version to 1.4.16g
20111015	Fixed wado dcm compression (incorrect extension)
20111018	Added TempDir ini file option
20111114	Version to 1.4.16h
20111120	Default size in convert_to_gif etc is now 0: as is
20120112	Fix in passing script to submit command
20120211	Allow passing optional DDO as first arg to set/getpixel set/getrow Object:SetPixel, Object:GetPixel, Object:SetRow, Object:GetRow
20120212	Fixed uncompress WADO; fix POST code for SOAP serving; export globals to lua in CGI mode
20120212	Fixed POST for IIS (read len, not len+1)
20120213	Small fix in x:GetRow etc; Setting Dictionary and ACRNemaMap for CGI enables moves and queries
20120213	Moved some set and virtualquery logging to SystemDebug
20120214	Allow any file to be POSTed, saves as xxx.dat; Added DefaultPage and AnyPage items
20120215	Reversed CGI key test to allow query string where e.g., mode= appears twice, hit on first
20120215	Added optional markseries and markstudy pages if passing value 'key' down into them
20120217	Added shoppingcart option; enabled if configured and passing value 'key'
20120218	Added DefaultPage to make own top and AnyPage to totally disable built-in CGI server
20120219	Disabled WEB push to self, and zip from remote server (which was invalid anyway)
20120220	Added WebPush configuration to allow disabling push options; show more config items
20120220	Version to 1.4.16i
20120221	lua can run script on any dicom object; empty tag does not return NIL to lua; lua dictionary(); fix uploadedfile
20120222	Fix webpush and crash on IIS for empty QUERY_STRING
20120229	Extended number of possible columns in PatientStudyFinder
20120302	Added gpps lua function; DefaultPage may be e.g., *.lua; any mode is that mapped to mode.lua
20120304	Implemented region and anonymize options to wado
20120304	Made DefaultPage and AnyPage sections; Fixed WADO text output; Version to 1.4.16j
20120305	Added statusstring for simple web feedback of dicommove and submit (not multiuser safethough)
20120306	Added lua callback to dcmmove2; added statusstring: server command
20120306	A failed virtualserver request will now not wait until a timeout and log error messages
20120307	Added bridge=AE option to make local WADO server a proper bridge (see MyBridgeStorage and LoadForBridge and 0x2bad)
20120317	Documented imagefinder; added process study|series with xxxx.lua (just command_line is passed)
20120318	Allow "file.lua" directly as importconverter instead of lua "dofile('file.lua')"

20120319	Implemented lua: filenamesyntax; e.g. lua:dofile('generatefilename.lua') or lua:Data.SOPInstanceUID..'.dcm'
20120320	Added [wadoservers] bridge = AE to force wadoserver by default to bridge for one given AE
20120325	"lua" and [lua] ExportConverter, "copy" ImportConverter and "defer" ImportConverter (for lua ExportConverter)
20120327	Document status_string: command
20120402	Improved OverlapVirtualGet: allow to reverse operation - give slices out mainly in incoming order; Avoid deadlock by conflicting requirements; SystemDebug some status messages in OverlapVirtualGet and ReadAheadThread
20120402	Released 1.4.16j
20120525	When retrieve from virtualserver is ready cancel outstanding c-move requests; Increased virtualserver timeout to 200 sec
20120601	Implemented WORKLIST query from lua
20120621	Fix readahead crash when client hangs up in the middle of the transfer
20120624	Limit virtualserver to 64 per move; virtualserverperseries obsolete; fixes crash when series larger than move
20120624	move mkdir etc defines in dgate.cpp up to line 2220
20120624	Keep move object intact in lua dicommove and dicomquery; report fail for lua sql and readdicom functions
20120624	Prerelease 1.4.16k
20120630	Allow compression to be e.g. JL etc or JLNN, J3NN, J4NN, J5NN, J6NN: NN is quality factor
20120630	Reverse .dcm check: all is assumed .DCM except .V2
20120701	Added dicomdelete; note: tried to make heapinfo() thread safe but failed; added [lua]nightly script that runs at 03:00; and [lua]background that runs every second
20120701	release 1.4.16k
20120702	Protect lua_setvar against NULL string
20120721	Fixed CGI code that got extension wrong on unix with . in folder name
20120722	Added LUA_5_2 compatibility by bcb; removed unneeded buf[1024]
20120723	Fixed *count-- --> (*count)--
20120829	"mkdir " script command no longer requires a trailing / or \
20120829	Force even text/plain output; first pad ' '; then strip when odd
20120829	Version to 1.4.17
20120905	Fixed bug found by Bruce Barton in [lua] ExportConverter
20120908	Added fix for virtualserver on imagetype and NOIMAGETYPEFIX flag VirtualServerForN may be e.g., "server,NOIMAGETYPEFIX,FIKKODAK"
20120914	Changed default of above fix to off: flag is now IMAGETYPEFIX
20120914	Attempt to use VirtualQueryCached to build list of images to be retrieved in VirtualQuery. Filter response in virtualquery (for virtualserver) for incorrect response of carestream to IMAGETYPE query
20120916	Cleaned up code; split in VirtualQuery and VirtualQueryToDB (that uses VirtualQueryCached); Renamed option IMAGETYPEFIX to send only 3rd element of ImageType to

	IMAGETYPEFIX3; IMAGETYPEFIX just tests each received record for a match against queried ImageType
20120917	Move dumps response in case of error; finished IMAGETYPEFIX
20120922	IMAGETYPEFIX also works on EchoNumbers
20121015	Fixed check on V2 filename extension to enable NKI compression again
20121016	1.4.17alpha release
20121201	Added and disabled code to link optional socket.core library
20121208	Added __tostring method to lua representation of dicom objects; fix luaGlobalNewIndex: writes dicom.ini as well as direct variables; Blocked delayed export converters of non-existent objects; Added WatchFolder parameter (second monitored incoming folder)
20121214	Enabled socket.core; use .zip for submit version to 1.4.17beta Fixed 'forward compressed as ' in import and export converter (viewtopic.php?f=33&t=15588); Added lua Association.ConnectedIP member (WIP)
20121216	Added DicomObject as class factory with new and newarray, added :free(), fixed ConnectedIP
20130125	Added changeuid and changeuidback to lua interface; Anonymizer accepts anonymize_script.lua as well as anonymize_script.cq; Added ImportConverters "olduids" and "olduids except"
20130127	Added dgate --luastart: (returns immediate)
20130128	Added crc to lua interface
20130202	Added getimage, setimage, :GetImage, :SetImage to string GetVr has extra parameter (binary), SetVR accepts (binary) string; Added "pack" library hardcoded; lua genuid; protect lua :Read filename
20130210	mvh Fixed e.g. process study after 5 with test.lua %i:%o; Note: there must be arguments passed to command_line
20130215	Fixed source = xxx.lua cgi starter
20130218	re-allow readdicom on empty Data object; header now works for lua cgi script (default disabled)
20130218	Report move failure in dgate -- commands
20130218	Added studyviewer (default disabled); added dgate --dolua: Documented lua command line options; socket.core only for win32 now
20130219	1.4.17beta released as update
20130320	Added lua system() call; fix BackGroundExec with spaces in path
20130321	Add BaseDir\clibs to path; added missing logs for converters such as rm
20130417	fix lua dicommove parameter 5; fixed 'webscriptad(d)ress'
20130417	Unescape % in luaSeqnewindex generated "set ..@ script
20130502	Added \nAccess-Control-Allow-Origin: * or \nAccess-Control-Allow-Origin:* to all WADO generated messages, the space is omitted to force header EVEN
20130502	1.4.17beta2 update
20130522	Added options to pass command line to submit data (dgate --submit2:, IE submit2 ..)
20130522	Fixed incorrect case of dicomworklist name found by marek
20130523	Reset dummyddo to avoid incorrect freeing of what it points to

20130523	Fixed bug introduced 20130417 with unescaping Data.xxx = nil or {} no longer worked
20130523	In ModifyPATIDofImageFile change PatientID after running script (assumed changes uids)
20130523	1.4.17 release
20130606	Fixed crash in headerdump of RTSTRUCT (buffer overrun)
20130709	Added float to short conversion in luasetimage
20130709	Added support for setting simple US and UL items with e.g. set Rows to 256
20130711	Fixed luasetimage, fixed some lua return values, version to 1.4.17a
20130716	Added dgate --moveaccession: using 7777 magic number
20130804	dgate --lua: and --luastart: now run in local environment
20130806	dcmmove callback and process with lua now thread safe
20130806	fixed setimage(frame, string), version to 1.4.17b
20130808	Enabled logging of process series by command
20130808	Fixed importconverter command that used patid in memory; failed after anonymization
20130808	Added import_critical and export_critical to make "forward to xxx" thread safe
20130810	Removed export_critical (is serialized), added channel * to importconverter forward to
20130810	Added closing of importconverter forward to PDU after ForwardAssociationCloseDelay
20130811	Fixed that missing images were removed from db even of no virtualserver is defined
20130812	Fixed deadlock of closing of importconverter
20130812	added lua sleep() in ms; removed unused TransmitCompression
20130813	Removed unnecesary double N checks in forward import converter; added lua addimage() and :AddImage() added VirtualServerQueryConverter and VirtualServerQueryResultConverter; Pass file.lua(command) and patient ID of anonymizer to command_line & set version
20130820	Fixed forward compressed as XX to IP:PORT
20130826	Test presence of lua file with same name as exe, if exists run that passing arg[]; Pass arg[] for dgate --dolua:; allow dgate --dolua:filename, searched in . and lua/.
20130829	Version to 1.4.17c
20130903	Greatly improved read speed for very large c-moves by reordering if statement in search loop
20130912	Documented where the merge of virtual query computed fields should be added. The field should also not be stripped and there are other issues as well
20131013	Set rc to 1 for [lua] converters; should fix QueryResultConverter0; added quality to ToJPG
20131030	Fix in virtual server if c-move callback occurs less than once per image; test did not generate proper filenames and error message was given improperly
20131103	Fix in VirtualServerPerSeries when exact #images, would omit SOP tag but set level to IMAGE
20131104	Reversed logic: 1 image gives IMAGE move and SOP uid
20131107	Added quality clause to save jpg; Release 1.4.17c
20131219	Fixed that MIRRORDevice0 setting starts mirror copy thread

20140128 added copydicom(source) DicomObject:Copy(); DicomObject:Compress(string)
20140209 mvh Added dgate --compress: command
Spectra0008 Tue, 4 Feb 2014 17:40:17 -0200: Fix cppcheck bug #6 'items[4]' index 4 out of bounds
Spectra0012 Wed, 5 Feb 2014 16:37:14 -0200: Fix cppcheck bug #5.5 printf format string has 1 parameters but only 0 are given
Spectra0013 Wed, 5 Feb 2014 16:57:49 -0200: Fix cppcheck bugs #8 e #9
20140215 Processed Pablo's cppcheck issues
20140219 Added generic decompressor dgate -nu file_in file_out (works for XDR and DCM)
20140304 Detect Data:Read() and do not crash server on it (just fails)
20140309 fixed lua/file.lua returns status rc; newuids no longer generated or changes empty uids; lua mkdir(), dicomquery() now returns raw; fixed luacompress and luacopy; dicomquery2 old one fixed some linux warnings
20140311 Started adding response codes to dgate -- commands;
Stop LoadForGui accessing non-configured virtual servers
20140314 1.4.17d release
20140319 Updated command line documentation
20140417 Changed the array initialization loop in RemoveQueryDuplicates
20140506 merged release comment
20140509 Note: DicomObject:Read('p:sop') does not access virtual servers while DicomObject:Read('stu\ser\sop') does
20140519 Avoid uninitialized index in RemoveQueryDuplicates(), removed duplicate includes and corrected check on "vr" in getptr(), corrected "testmode" message in CallExportConverterN()
20140527 Fixed exit codes: 0 is OK, 1 is ERROR; block filename containing .partial from incoming import
20140527 1.4.17e1 prerelease
20140910 Fixed moveaccession; call RejectedImageConverter for failed load in incoming; 1.4.17e2 prerelease
20140916 Fix buffer overflow in html processing of long cgi query results
20140916 Fixed mirrorcopy: it failed to perform mkdir
20150416 Header lister, SearchDicomObject, and lua GetVR and SetVR now support types: UL, US, SL, SS, FD, OF, FL and OW. Lua GetVR and SetVR tables now start at 1
20150504 Added lua string:reshape to reorder large strings representing binary data
20150629 Keep quality spec in "forward compressed as"
20150719 Version to 1.4.19alpha
20150720 Fixed case of DICOMWorklist in web interface; holding message in queue no longer warning; Start work on luaexport; todo: get filename
20150730 Expose DeleteFile option in ModifyData; split ServerTask from main loop; add --modifier: option
Allow redirects of logging in --dolua call; -lfile and -Lfile logging
20150902 Added -x#: progress port; added NewDeleteDICOM and NewICOM lua interface, added Progress info to DcmMove2
20151023 Fixed wado region for non-rectangular images
20151026 Fixed anypage and exceptions logic in web interface

20151108	Added extract:n,query mode to allow extraction from individual tables
20151108	1.4.19beta; protect thread count with critical section; Object:ListItems and DeleteFromSequence method calls; Array:Delete command
20151123	Added progress information to: delete, move, grab, loadfromdir, modify and prefetch
20160108	Updated ChangeUID calls to support staged anonymization, added newuids stage and olduids stage commands
20160113	WADO Anonymize=string other than yes passed to lua/anonymize_script.lua(string)
20160118	Export: now names files in zip file with SopInstanceUID; added changeuid fourth parameter: Type string
20160119	Fixed named anonymizer in wado request
20160124	Pass Type to ChangeUIDBack; name zip entries to SopInstanceUID; fix wado named anonymizer
20160220	Allow forward slash in code detection autostart lua file
20160306	Added sop to modifier: command; DeleteImage can take patient:sopinstanceuid; Added empty study and series to deleters where needed; deleteimage: command
20160306	Added move: command
20160306	Fix progress info of DicomMove function
20160316	Added progress to export: - note does not uncompress data unless scripted so; extract:-n,query sorts
20160317	Added todbf: command; removed convoluted extract:n and extract:-n
20160319	Decompress images in WADO jpg client, forgotten when cropping
20160319	1.4.19beta release for windows
20160424	Linux fixes
20160516	Added JpegLS to WADO interface
20160516	Small fix in cgi status display get_remotea --> get_remoteae; do not use hardcoded "acrnema.map"
20160516	Split images counter for Jpg and Bmp (e.g. ImagesToBmpFromGui)
20160716	Added lua tempfile and returnfile; added n0 and nN transferSyntax to wado server: simplify and NKI compression
20160718	WADO now supports image/bmp and experimental bmp strip (set frameNumber<0)
20160723	Added experimental jpeg strip function; allow multiple for jpeg and bmp (set frameNumber to -columns)
20160827	Added Lua destroy, reject and retry functions; version to 1.4.19beta3
20160828	properly copy Called and Calling, fix ExportConverter script passing; version to 1.4.19beta4
20160830	Fix in importconverter change above, version to 1.4.19beta3a
20160901	Fix passed windowwidth from CGI WADO request to wadorequest, was divided by 2
20160905	Fix stripping of space from called and calling: crashed when empty e.g. all spaces
20160905	version to 1.4.19beta3b
20160913	Added lua ConvertBinaryData to allow fast R interface without vstruct
20160917	Completed it with s conversion

20161120	dbquery returns nil if query fails not {}; version to 1.4.19
20161204	Catch image VR null in getptr (lua image access), test return of recompress in scripting
20161212	Retry after 5s in Linux LoadAndDeleteDir after discussion with snalbansed; This is because there is no other way of finding if a file is finished
20161214	Loop retry 30 times
20170203	Replace ' with _ in loadhl7
20170208	Release 1.4.19
20170226	Increased buffer size for servercommand return data to 5120
20170312	Added cgi style options or upload file as second argument to Lua servercommand
20170316	Started on 'binary' mode for returning large objects
20170419	Made binary mode compiling; use (merge) stage for merging UIDs, max merge# to 1000; version 1.4.19a
20170430	Release 1.4.19a; note that 'binary' mode of lua servercommand is non functional
20170511	Fix overrun affecting ModalityWorkListQueryResultConverter0
20170528	Fix ModifyPATIDofImageFile and MergeUIDofImageFile set KeepImages to FALSE Version to 1.4.19b
20170530	Add empty StudyUID to deleteseries()
20170921	Added gamma on display functions, e.g. save bmp
20171009	Fix for crash when c-move is canceled, thanks Tetraib (Thibaut)
20171010	Added Content-length to html header
20180122	Fix servercommand binary mode, added <upload and >download file mode; add output file option (r7) to wadorequest
20180122	Version to 1.4.9c; added Global.DGATEVERSION
20180204	Report save jpg etc to SystemDebug
20180301	into_queue_unique resets time stamp for every save; silent destroy2 method
20180315	started on C-GET
20180315	C-GET seems to work OK; Added RetryForwardRemoteDICOMError config
20181115	Fixed default of ImportExportDragAndDrop to 1
20181117	Added luasocket to linux compile
20181124	Made it 1.4.19c1
20190101	Fix a leak; all calls to NewDeleteDICOM get patid & 3 UIDs, can be empty
20190118	Made it 1.4.19d
20181215	Adjusted and simplified servercommand to allow return of long strings
20181215	Version to 1.4.19d; added Serialize for DicomObject and DicomArray
20181216	Improved Serialize to escape and ignore unknowns; added sequences; comment if too long
20181216	Changed callback to progress port of dicommove to conform to key=value standard
20181216	Added PATIENTP and STUDYP levels to dicomquery for PatientStudyOnly queries
20181217	Added AddToSequence, DicomArray:Add() and dicomprint;

	better callback and return error string in dicommove
20181218	Silence conquest ImportConverters run from Lua; added callback to dicomprint
20181220	Added \n after all Progress.printf output; Progress port uses lossless TCP
20181221	Send printer information to [lua]printserver or to Progress port
20181222	Added luadicomget; removed superfluous DCO from luadicomquery
20181223	Put progress port back to TCP until new GUI committed
20181227	-x!port uses TCP; -xport uses UDP
20181229	Added luadicomstore
20181231	Create all threads with 2MB stack space, Intel compiler seems to be less forgiving
20181231	Allow luaservercommand to return NIL; increased HTML command buffer space
20181231	Version to 1.5.0-alpha
20190101	Fix some leaks in new lua functions; all calls to NewDeleteDICOM get patid & 3 UIDs, can be empty
20190102	Improved error handling in lua functions; removes superfluous DCO from virtualquery
20190103	Fixed dicomstore; protect ImportConverters (e.g. move:) against crash Fix deletestudies: command; added Lua tickcount() function Fix leaks in deletepatient: dicomstore() and dicomget()
20190112	Use strrchr to find ':' in patientID:uid pair; allows : in patientID
20190318	Made it test2
20190501	Fixed definition of HandleError to BOOL
20190501	Made it test3
20191017	Added attachfile server command and web page
20191019	Set ConfigFile and BaseDir in cgi mode, chdir to it, added -hAE
20191019	Retired scheduletransfer and some unused web interfaces because of compiler limit
20191019	Allow numbers inside Dicom names; fix querycache for linux; 1.5.0-alpha-t4
20191209	attachfile will also process zip file; version to 1.5.0-beta
20191212	Added lua CGI() call; returns post_buf as is
20191215	Fix in above; also read post_buf for other requests (GET, PUT), unlink uploadedfile at end
20191219	Fix zip in attachfile for Linux
20191221	Added lua listoldestpatients(max, device, sort)
20191227	Fix in reading POST parameters with CGI(); set filename for export: and convert_to_dicom:
20200107	attachfile: now reads embedded file if available; added lua dicomecho()
20200108	Allow e.g. servercommand('Command["9999,0401"]="val"') as alternative to returnfile
20200109	Removed double Content-length in download header; fix %c format in querycache; cast in serialize
20200118	Added rudimentary json support call DicomObject:Serialize(true)
20200119	Fix escaping in it and fix recursion
20200120	1.5.0-beta1: added logging to ForwardAssociationLevel close; Added DelayedForwarderThreads

	Added experimental 'split ' clause to delayed forward (cannot be used with imagetype clause)
20200122	Set Command for many (not all) converters, passing DCO to SaveToDisk, CheckObject and CallImportConverterN
20200124	Added lua: Im/ExportConverter; must be last in line as it may contain ; " { or }; Note e.g. %f is still substituted, beware of using % in lua code, escape to %%; added %g generate uid
20200125	Added DCOextra to lua dicommove and DcmMove2, will be added to DCO to control move
20200126	Added --mk_binary_dic: command; Simplified servercommand convert_to_xxx
20200203	1.5.0-beta2: lsp removed DataPointer stuff to support lsp array change Added LUA51EXTERN option for dynamic loading of lua5.1.dll
20200211	Take luasocket out when LUA51EXTERN defined
20200215	Make sure globalPDU.L is created in dolua:
20200216	1.5.0beta3; remove static linked luasocket
20200302	Open lua scripts in im/exportconverters at Global.basedir .. name (relative paths) Note: web contents and process require absolute paths
20200307	Instead of tempfile now can use Command:SetVR(0x9999,0x0403,"val") This allows two way data communication: input and output using 0x9999,0x0401
20200311	1.5.0-beta4 version, fix attachfile of zip under Linux
20200311	Make sure progress closes on failure of commands
20200314	Release 1.5.0; Update dgate -?
20200316	Added doglobaallua: servercommand - runs in global context in critical section; Also added critical section for nightly, background and dgate.lua
20200528	Version to 1.5.0a; changed truncation of AnyPageExceptions from 255 to 511 Use single DB per folder in LoadAndDeleteDir
20200704	Added missing command to submit2 importconverter; added command [xxx] to imp/exp
20200704	Renamed doglobaallua to globaallua; added to dgate
20200722	Version to 1.5.0b
20201012	Fixed initialization of HL7 parser, and allow Unix EOL
20201029	Pass db into ChangeUID(Back) and New/OldUIDsInDICOMObject
20201101	Added 3x5s retry on AttachFile and AddImageFile in LoadAndDeleteDir
20201116	Added global_query_string and -y option
20201224	Added regen and regenFail converter; luacompress returns nil on failure
20210325	Version 1.5.0c
20210415	luadicomstore returns an dicomarray of results
20210501	Allow use of 0x0008,0x3001 sequence to return servercommand result
20210509	Added UT in header dump; simplified overflow check in luaserialize, upped limit
20210928	pivoglot: Removed max(), do not use strstr()>0; allow host:port for dicomecho and dicomget

20210930	Added md5() for lua
20220131	Added object:Serialize(true, true): json with pixel data included
20220210	Fix object:Serialize(true, false); add convert_to_json, -jj and -js options
20220227	Added json input o=DicomObject:new(json), o:SetVR(g, e, json), o:Copy(json) (latter merges)
20220307	-ar has optional dir folder; e.g. dgate -arMAG0,a*.* regens all folders with 'a'
20220308	Fix buffer overflow in luaserialize
20220718	-$ sets stdout to binary; lua servercommand2 WIP
20220729	serialize has a third parameter: creates dicomweb style json output
20220729	fix dicomweb formatting of empty VRs
20220803	Fix serializing of empty sequences; fix json parsing dealing with sequences and undefined items
20220805	Added "binary" mode to luaservercommand; will not remove trailing zero/space Set 0x9999,0x0404 if payload file has odd length and process when recieving to lua (only for now)
20220807	Set e.g. Rows (US and UL elements) to "" to make it empty instead of 0
20220809	Fix -$ argument for Linux (ignored)
20220810	Added support for json item names like "00100020" as well as tag names
20220814	Added and use wadoparse server command in cgi exe mode, keep wadorequest
20220815	Most output formats that recognise cgi now accept binary
20220816	Fix Serialize in dicomweb format for sequences; use uppercase FX for dicomweb
20220818	Added e.g. scrub -Private,7FEO,00100020 (delete group,vr) or scrub +0010 (keep)
20220819	Code IS and DS as proper array in dicomweb mode; fixed AT 20220819 mvh Removed trailing space of ST items, encode OB if includepixeldata; If json format and not encodepixeldata do nothing (was taken as string); Control OB OW and OF with includepixeldata
20220820	Fixed bug in serialising empty object missing opening bracket, and empty DS and IS
20220820	Fix when a sequence with just OW data was serialized without includepixeldata
20220821	Added dicomread(query); local replacement for dicomget with scrub; bit slower though..; Another fix for empty US elements
20220823	CGI("_filename_) to get uploaded file name; protect writes there
20220824	Second parameter of dicomread allows header truncation
20220828	CGI allows dgate -pPORT -qIP -hAE -ycommand (with -y last!)
20220830	Reject __MACOSX folder, and files starting with ._ in LoadAndDeleteDir; pass DB to LoadAndDeleteDir to avoid DB activity each second in monitorthread
20220830	---- RELEASE 1.5.0c -----
20221014	Allow response from servertask <file

20221016	Handle odd length return data from servercommand; and odd length upload; Note: dgate.dic must be updated to read the conquest items properly
20221220	Added DelayIncomingFileOpen (ms) for incoming files to avoid reading partial
20230612	Allow () for command in process by clause; by clause is tested for uniqueness
20230701	Pass ConnectedIP as argument to make it thread safe
20230701	---- RELEASE 1.5.0d -----
20230814	Fix luadicomread if no SOPInstanceUID was passed
20230830	Remove temporary file in "process with"
20231018	Added ppDDO parameter to CallImportConverterN to fix readdicom; added resetdicom & O:Reset()
20231021	Fixed :Reset (added to method string list); reverted ppDDO change
20231021	Fixed dicomread() and now allows Data:Read() too
20240103	Maintain typecodes in MakeCopy
20240104	lua changeuid with 2 parameters is (uid, to) 3/4 parameters (uid, to, stage, <type>)
20240104	Added IgnoreRewrite parameter
20240610	Added AllowNKIAsDICOM; process DS as string in luaserialize
20240922	SM1312 supress '+' in DS to json conversion in luaserialize Allow NightlyCleanThreshhold and NightlyCleanThreshold
20240924	Added lncoll message on rewrite
20240924	Read level and window as float and round to int in convert_to_gif etc
20240925	---- RELEASE 1.5.0e
20250405	Retry database connection in monitorthread
20250407	Pass e.g. ExportConverter5 = forward study xxx to separate prefetch_queue 6
20250413	Retry 60 times with increasing delay
20250423	Added [lua]poststartup and [lua]timer events
20250423	Fix for linux
20250831	---- RELEASE 1.5.0f
20250909	Added OffsetDatesInDICOMObject; offsetdates import converter
20250910	Only change when date scanned correctly
20250929	Added script option after all move commands
20251031	MB fixed truncation of script at 260 characters in "process by". Max length is now 360.
20260107	Added bitwise lua functions lshift,rshift,band,bxor,bnot; changed nesting in servertask to avoid compiler limit
20260107	Also show text of 2 and 4 header elements
20260114	Date offset crashed and now ignores dates before 1971 (birthdates must be dealt with differently)
20260115	Also check time>-offset
20260119	Fixed check for processing zipped files, before fix would pass e.g. extension .7
20260119	Fixed the forgotten other one
20260215	Fix parsing and printing of tm_mon in new function OffsetDatesInDICOMObject; Fix 2x parsing of tm_mon in "now " clause in delayed forward etc; affects object selection by age from now

	Fix 2x parsing of tm_mon in "age " clause in delayed forward etc; affects object selection by age from study Fix printing tm_mon in VirtualQueryCached; now disables caching relating to today for e.g., VirtualServerFor0 = AE,CACHESERIES
20260614	Optimized lua globals; Added backupdatabase and backupschedule server commands
20260615	Update backupschedule to include keep, at hour, and filepath; tested h, d and keep
20260616	Fix that lua-poststartup would block lua-timer and backupschedule
20260616	Added blocks and delay option; doc; added 'n' for minute backup to simplify testing
20260620	Small fix, extended doc
20260622	Fix week and month; added # and $ to backupschedule to pass blocks and delay to backupdatabase
20260701	Define LUA51BUILTIN; use "socket" not "socket.core"; for week only 1 backup schedule
20260707	Added imagefilelister: command that can work at any level
20260710	Added concat: writes or returns boundary delimited batch of uncompressed dicom objects
20260716	Merged fixes by Divinus (overwrote tempfile, added compression) just use importconverter %n %r as control characters
20260716	Emit boundary at start of each dicom object; re-added \r \n translation by Divinis
20260809	Catch errors of dbase.CreateTable (crashed server browser for mixed users)
20260813	Lua package.path for require() to search in server/lua folder
20260813	Fix json formatting of DS like 0600,-0600
20260818	Fixed above fix that broke formatting of float values
20260823	Disable most of old CGI interface; keep newweb working
20260824	Fix parameter check on concat:; avoid 9999,0400 buffer overrun; protect some dicom.ini entries
20260826	Export remote_addr to cgi web pages
20260901	Start on checkaccess for servercommands; failure logged to console
20260902	Finalise checkaccess and export to lua; default allows 127.0.0.1 only; comma separared list with simple wildcards
20260904	servercommand --checkaccess:op,ip where ip maybe v6, matching e.g 1:*, 1:2:*, 1:2:3:4:*, 1:2:3:4:5:6:*
20260905	Increase buffer sizes and check Length to avoid crash on incorrect dicom object
20260906	protect checkaccess against too long ip6
20260906	Use new vr->GetString to avoid buffer overruns and simplify code
20260906	Version to 1.5.0g
20260907	checkaccess adds regular DICOM services, better matching, some ip6 fixes
20260907	Pass len to GetImageFileUID and MakeSafeStringValues
20260907	Implemented map in checkaccess (any occurance will append all non-wildcard IP addresses in acrnema.map); Fix :: and lowercase in IPv6 as reported by Divinus;
20260907	Gotten rid of nasty SetString function, use GetString instead

20260908	Fix SM1312+Claude error: SetRequestedCompressionType not set when using opening ExtendedPDU_Service
20260908	Fix SM1312+Claude error: PDU link not closed when reusing PDU in luadicomget (now configurable in forward)
20260908	Added AllowedIPs and DeniedIPs for cverification, cmove, cstore, cfind, cget, cmovedest
20260908	Print bit of offending server command and its originating IP; print IP of every association
20260910	Export series/series2 to web lua code, broke wadoseriesviewer from PHP
20260916	Remove reference to anonymize_script.cq, only use lua/anonymize_script.lua
20260919	Added nice ipv4/ipv6 matching code for checkaccess by Marcin Makalowski DivNet/MakeIT divinus
20260919	Map lua checkaccess to servertask checkaccess:; AddImageFile runs dTestDICOM; uncompress images to print
20260920	---- RELEASE 1.5.0g
20261002	Fix protection against too many amap entries in AllowIps = map
20261002	Fix potential string overflow in luasystem
20261006	Fix checkaccess range check
20261007	Restored AllowedIPs for DICOM default to all, while for control only localhost is allowed
20261008	Implemented correct "map" max length check
20261012	Version to 1.5.0g3 update related to dbsql update
20261025	Version to 1.5.0g4; doc update
20261026	Ignore extra pars for lua functions like crc, md5
20261026	Reject 7za with filenames containing " to escape into shell
20261019	Re-enabled StorageCommitment behind dicom.ini EnableStorageCommitment (default 0 = as before); check each SOPInstance (database record and non-empty file), failures go to 0008,1198 with reason 0x0112 and give event type 2 (also on new association); refuse request without instance list (0x0120); do not send event if action could not be read; SOP class only accepted when enabled; event on new association was sent without data (writing empties the object: now a copy is written first) and now proposes the SCP role
20261019	StorageCommitment: refuse N-ACTION (0x0124) from a calling AE that is not in acrnema.map
20261030	Merged mmd incoming StorageCommitment; version 1.5.0g5
20261031	Made EnableStorageCommitment default 1
20261102	Now really prevent multiple triggers of backupschedule
20261104	Cap lua system call in Linux to 512(Marek Figielski, vanilla pl)
20261116	Added checkaccess items ca_nprint and ca_ncommit

DGATE.HPP (part of DGATE.EXE):

19980705:	Added CACHEDevices and JUKEBOXDevices, FindPhysicalDevice
19990108:	Added LoadImplicitLittleEndianFile and NKI PrivateCompession algorithms
19990109:	Regen has extra parameter
19990317:	Changed parameters of LoadImplicitLittleEndianFile

19991117: Added parameter FileCompressMode to prototype of nki_private_compress
20000629: Added TroubleLogFile and UserLogFile
20010415: Added KeepImages flag to RemoveFromPacs: clear from DB only Added SubDir parameter to regen to allow regen of one directory only
20010416: Added ChangeUID routine and RegenFile - to allow modification of images
20010429: Changed decompressor: now has extra parameter
20020529: InitializeTables now has mode parameter (0=normal, 1=simple)
20021018: GenerateFileName has NoKill option (for interactive dgate tasks)
20030120: Added prototype of FreeDeviceTables
20030701: compression parameter for amap
20030703: Added prototypes of recompression functions + ArchiveCompression
20030706: Optional filename parameter for recompress
20030706: Export VRType for implicit little endian support
20030921: Added DEVICE_TYPE_MIRROR
20040401: Added Changed and ActualMode flags to compress routines
20040626: Added study and series UID to getfilename interface
20040930: Adapted return type of SetString; added maxlen to BuildSearchString
20041013: Added MAXQUERYLENGTH
20041029: Added MergeUIDs
20041108: Added Syntax input to GenerateFileName
20050108: Adapted for linux compile
20050109: Added configurable TCPIPTimeOut
20050129: Added optional FILE to DumpVR, added CheckFreeStoreOnMIRRORDevice
20050401: Added QueryOnModalityWorkList, WorkListTableName, WorkListDB
20050404: Added DT_START/ENDSEQUENCE to code sequence in WorkList table
20050902: Made space for HL7Tag in DBEntry
20051229: Added iDepth to DumpVR
20060317: Added called and calling to GenerateFilename
20060324: Added StripGroup2 option to recompress
20060628: AddToDatabase has JustAdd parameter: skip one unnecessary query
20060702: Pass DB to GenerateFilename to avoid zillions of db open and closes
20070122: Added MIRRORDevices
20070201: Added DebugLevel
20070207: Added MakeTableString
20080818: DbaseIII check now uses DB flags, not PATHSEP in datasource name; Added DT_MSTR
20090620 Include file stuff
20091231: Changed char* to const char* for gcc4.2 warnings
20100111: Merged
20100123: Added DT_FL and DT_FD
20100125: Removed linux warning
20100309: Changed SQLLength to unsigned int
20100703: Merged

20110119: Moved two functions to the correct place
20160108: Updated ChangeUID calls to support staged anonymization
20160219: Removed BOOL TRUE and FALSE defines
20171122: Added DT_ISTR (case insensitive query string)
20260907: Pass lenghts to MakeSafe functions
20261005: Change widths of amap fields to 32-128-64-32

LOADDDO.CPP (part of DGATE.EXE):

19980409: added NKI private decompression engine VR 0x7fdf,0x0010
19980410: added run length encoding of zero differences
19980410 Fix 16 bit absolute value decode
19980415 Fix leak on decompress
19980625 Added compression in SaveDicomDataObject(C10)
19980703 Made DObjectSerialize thread save (removed statics)
19990105 Fix: SaveDICOMDataObjectC10 created VR 0x0002 0x0013 twice. Added comment in SaveDICOMDataObjectC10; CleanUp. Put the nki-routines also in dgate.hpp. Added LoadImplicitLittleEndianFile
19990317 Decompression removed from LoadImplicitLittleEndianFile; added a VR-sizelimit of that reader
19990827 NOTE: LoadImplicitLittleEndianFile allocates 100 MB and crashes when passing chapter 10 file (happens when extension is wrongly .v2)
19990830 Fixed problem above: 'LoadImplicitLittleEndianFile' uses 'PDU.LoadDICOMDataObject' in such cases.
19991117 Added parameter FileCompressMode to in nki_private_compress call
20000629 Logging of trouble now starts with '***'
20001104 Renamed _LittleEndianUID to _LittleEndianUID_space
20001105 Fixed where malloc and new were mixed (vr->data)
20001106 Use delete [] operation for vr->Data
20001128 Fix in 'Implicit length' code in LoadImplicitLittleEndian
20010429 Use faster and safer decompressor
20020412 Added class CBufferedIO for faster reading from DVD (stream functions do not seem to be caching.)
20020415 Removed diagnostic time code (did not compile on ms4.2). Made buffer size dependent on iVrSizelimit (i.e, use smaller for regen, slightly faster)
20030706 Attach VRType to PDU's for implicit little endian support
20041130 Documented crash on win2000 server in code - remains to be fixed – rare crash related to read error of DVD
20050107 Adapted for linux compile
20051219 Use ReAlloc instead of new BYTE[] to fill VR data
20070308 And little/big endian.
20081116 Adapted for very large objects (use unsigned int for length)
20090211 Safety checks in LoadImplicitLittleEndian to avoid crash on corrupted V2 file; Removed lots of dead code
20090412 Fixed for linux compile (tell does not exist)
20091215 Fixed LoadImplicitLittleEndian() when iVrSizeLimit is used (e.g. regen) (assumption that the pixeldata would be the last VR is not correct).
20091231 Changed char* to const char* for gcc4.2 warnings
20100111 Merged

20100210 Fixed reading some old V2 files (-1 VR lenght).
20100309 Changed int to unsigned int, cast m_iNbBytesInBuffer to long (gcc4.2 Warnings)
20100309 Commented out unused (gcc4.2 Warnings)
20100619 Fix gcc4 warnings, improve speed and prevent CBufferIO from being copied.
20100717 Merged

DGATEFN.CPP (part of DGATE.EXE):

19980326: changed file name generator to ensure correct sorting of image files by external applications
19980327: Added FileNameSyntax option in dicom.ini; 0=original, 1=allow sorting by name
19980407: avoid /;<>| in filename; for Philips: allow up to 9999 series and 999999 slices
19980409: do not free passed DDOPtr on failure: crashed the lot
19980415: Error messages to operatorconsole
19980620: Check error flag from GetDevice (for out of disk message)
19981005: Added FileNameSyntax 2: filename starts with SeriesUID_
19981005: Replaced size%64 by min(size, 63) for correct truncation
19981217: FileNameSyntax 3: same as 2 but accept errors
19981220: Fixed FileNameSyntax code
19990117: FileNameSyntax 4: same as 3 but .dcm extension (forces ch10 format)
19990117: Avoid attempts to rewrite image that is not on MAG store (e.g., on CD)
19990315: Do not allow '.' in directory name. In Syntax 3 directory name is now patient ID only (better for ACRVIEW). Better unique filenames by using time + counter.
20000127: FileNameSyntax 4 now does not truncate patid, as 3 already did
20000131: FileNameSyntax 4 has patient ID only as directory name (same as 3)
20000701: Added MaxFileNameLenght option: truncates from start
20010419: FileNameSyntax 5 on request of Jason Foster - uses patientname as dir
20011109: Made MAG name check case insensitive
20020416: Made filename counter 4 digits for when writing >100 files/s
20020416: Made all instances of time() unsigned
20020426: Cannot rewrite image not on MAG store is now a message without ***
20020508: The above message will not lead to a fail of GenerateFileName
20020802: Added FileNameSyntaxes 6..9; cleaned FileNameSyntax code a bit
20020804: Truncate patient ID to 32 chars for mode 6 and 8 (make sure len<255)
20021016: Pass indexed patid to GetFilename for speed
20021018: GenerateFileName has NoKill option (for interactive dgate tasks)
20021223: Added forbidden chars *, ?, " and : (comment from Thomas Buerer)
20030401: Ovverrule '.v2' filenames with '.dcm' when object is not ImplicitLittleEndian
20030522: Replaced 'static int counter' by 'unsigned int gl_iCounter'

20030606: Fixed incremental counter when creating UIDs or generating filenames
20030730: Overrule v2 only when not ImplicitLittleEndian, ExplicitLittleEndian ExplicitBigEndian (c.f. 20020401)
20030819: Allow longer filenames
20030921: Added DEVICE_TYPE_MIRROR TO GetDevice call
20040129: Added FileNameSyntax 10 = all files in one directory
20040301: Small fix for FileNameSyntax 10
20041108: Added Syntax input to GenerateFileName (overrides ini setting)
20050107: Adapted for linux compile
20050126: FileNameSyntax 11: StudyUID\SeriesUID\SOPUID.dcm
20050131: Changed root to 'name' for FileNameSyntax 11
20051210: Clear root output string when image already in database
20060312: FileNameSyntax 12: similar to 11 but uses Modality_StudyID as dir
20060312: Checked it: 12=name_ID\Modality_StudyID\SeriesUID\SOPUID.dcm
20060314: 12=name_ID\Modality_StudyID\SeriesID\SOPUID.dcm
20060314: new filenamesyntax, e.g., %name_%id\%modality_%studyid\ %seriesid\%sopuid.dcm
20060317: Added calledae and callingae to GenerateFilename flexible syntax
20060325: imagenum is image number as text, fix imageid, accept all errors
20060402: Fix potential problem when patient ID not there
20060701: Speeded string handling in new filenamesyntax
20060702: Pass DB to GenerateFilename to avoid zillions of db open and closes
20070125: Fix %modality; add %studydate and substring (year = %studydate[0,3])
20071027: Extended length of FileNameSyntz parameter to 256
20071027: Stripped spaces of called and calling in flexible filenamesyntax
20071030: Small fix in the above
20071104: Added %series: 4 digit series number
20090620 Include file stuff
20090620 Include file stuff
20090926 Added %studydesc and %vxxxx,yyyy etc
20090927 Added Cleanup ro %vxxxx,yyyy
20091231 Changed char* to const char* for gcc4.2 warnings
20100111 Merged; but cast Time to print to (unsigned int)
20100125 GetPrivateProfileString -> MyGetPrivateProfileString
20100126 Fixed readout of studydate (typo mix with studydesc)
20100303 Changed int to unsigned int, commented out unused variables (gcc4.2 Warnings)
20100703 Merged
20100828 Update history fix
20101222 Fixed that ascii codes > 128 where replaced by zero (truncated) in Cleanup; now kept
20110201 Changed prototype of SearchDICOMObject
20110606 A change of extension when rewriting is now allowed; object is then deleted first
20120319 Implemented lua: filenamesyntax
20121208 Added %date to filenamesyntax gives yyyymmdd
20131013 Default FileNameSyntax set to 4

20160316	Avoid buffer overflow reading string[-1]
20220227	Added RenameOnRewrite flag: will force rename of any object rewritten
20240522	Fix lua: FilenameSyntax (998), incorrectly replaced .lua with .dcm
20260906	Use VR->GetString
20261013	%sopuid was trunctated due to typo

DEVICE.CPP (part of DGATE.EXE):

19980620:	Setting MAGDeviceThreshHold to 0 causes out of disk error below 10 MB without cleanup
19980620:	Implemented PanicKillOff thread here as alternative to spawning killer.exe
19980702:	Started support functions for maintaining/determining amount of used space on device
19980704:	NOTE: JukeBox code only TruncateFieldNames compatible for now; used mp's filecopy
19980709:	Finished first version of archive options: prepare, undo, copy, compare, delete
19980721:	Set default # cache and jukebox devices to 0
19990110:	Made strings longer since got truncated, fixed some messages
19990110:	Archive one MAG device or MAG?; fixed SQL syntax for update; speeded 0x7fffffff. Return False if SelectLRUForarchival selects no data
19990111:	Reset archive flag reports to operator console; protected against illegal device#
19990113:	Run up to 10 patient further to try and fill CD more exact; max patients = 10000
19990114:	Added quick routine MakeListOfPatientsOnDevice and used instead of 0x7fffffff
19990117:	Accept any, not only *.v2, for computing patient size, assume max file size=30 Mb
19990630:	Added support for MIRROR devices (e.g., try MIRROR1 if MAG1 fails)
19990707:	Fixed default MIRRORDevices (now 0)
19990708:	NOTE: archiving should make use of mirror device if required as well!
19990712:	Fixed that MagRampage thread was started over and over again (fixed for WIN32 only)
19990831:	Fix: Several BOOL functions returned -1, which is TRUE !!
20000621:	Changed layout of this update-history
20000629:	Logging of trouble now starts with '***'
20001104:	Fixed aDB.Close -> should be aDB.Close(); added WINAPI to MagRampage thread
20010328	Added verify mirror disk
20010329	DeleteBunchAfterBurning also deletes data on MIRROR0 if it exists; verify mirror disk keeps on going after error but does return error
20010312	Check if we already selected some patients for archiving from the device
20010509	Added RenameDevice
20010522	Do not call RestoreMagFlags if something goes in wrong in PrepareBunchForBurning

20011114	Replaced slow updates for magdevice by much faster ones. The update that now no longer has the IN part might not work for ACCESS or DBF. So: for jukebox purposes, SQL server is required
20011115	Replaced 'LIKE' by faster '=' in query strings; fixed previous fix
20020412	PanicKilloff will delete now delete 5 MB data at a time. (high water = low water + 5)
20020415	Added TestImages: sanity check of images on disk
20020416	Reversed read order for TestImages and VerifyMirrorDisk: MRU first
20020802	Allow multiple subdirectories in rmdir and mkdir code
20020804	Cleaned up a bit
20021018	GenerateFileName has NoKill option (for interactive dgate tasks); moved ALERT warning
20021020	Simplified and speeded queries for archiving using ImagePat field (requires rev5+ of db); Removed " and added [in MakeSafeString; hand-code one query for built-in dbase driver; Changed SQL construct in SelectLRUForArchival for compatibility with built-in driver
20030120	Added FreeDeviceTables
20030702	Start on ArchiveCompression; for now KB is specified -before!- compression
20030705	Replaced ProcessDDO by more correct DecompressNKI to check pixel data
20030706	Attach VRType to PDU's for implicit little endian support
20030724	Fix in GetKBUsedForPatient: missing %s in printf
20030819	Allow longer filenames
20030905	Allow longer filenames when reading device paths
20030921	Added DEVICE_TYPE_MIRROR in GetDevice; allow PanicKillOff to be called with variable threshold
20031217	Fix: Support harddisks bigger than 2 GigaByte!!! in CalcMegsOnDevice (Thanks to Clifford Sweet)
20040403	Moved ArchiveCompression to SelectLRUForArchival -> fills disks correctly
20040614	Added MoveDataToDevice
20050107	Adapted for linux compile (no threads yet, no check of disk space on device)
20050109	Added threads for linux
20050118	Detach thread after starting it to avoid leaks
20050119	GetKBUsedOnDevice is not used --> no problem to return -1 under linux
20050414	Fix CalcMegsOnDevice for relative path
20050421	Fix: MAGThreshHold is space for largest file != space for cleanup. Now set to 30 MB independent of MAGDeviceThreshHold
20050901	Fix free space check for unc paths (error counting \)
20060311	When GetDiskFreeSpaceEx fails allow storing data anyway (fix for Marius Petruc)
20061213	Fixed nasty bug in MakeListOfPatientsOnDevice: Query without bindfield overwrites previous bound strings!
20070316	Cleanup now starts at MAGDeviceThreshHold to MAGDeviceThreshHold+1000, was start on 30 to MAGDeviceThreshHold; Allow both MAG0 and MAG0.Archiving as input for PrepareBunchForBurning

20071027	Protect MakeListOfPatientsOnDevice on MAXPATIENTS; LRU selection now configurable using routine MakeListOfOldestPatientsOnDevice. E.g. if LRUSort = StudyDate, deletes or archives least recent scanned patients first. The default "" means that the original sort order on db entry date is kept
20071031	Catch out of memory errors and return error status if so
20071118	Adapted for 64 bits (use SQLLEN for BindField)
20071128	Fix by kamil.krasnik of Cache device disk space test for UNIX Also fix Cache and Mirror for UNC paths
20080126	Fixed bug reported by Ali: second move to MAG1 of more data if same patient would fail on delete. Added new logic: attempt to delete file from MAG0 that is not in MAG0 but is in MAG1 is OK. Similar attempt to delete file from MAG0 that is in MAG0 but not in MAG1 is an error
20080302	Fixed case of DICOM table names
20080317	Fixed deletebunchafterburning change (Ali)
20080604	Modified device searching order when file not found: JUKEBOX now also searches other JUKEBOX
20080617	Fixed bug in above: second jukebox not accessed correctly
20080818	DbaseIII check now uses DB flags, not PATHSEP in datasource name
20081016	Fix check of max patients in MakeListofOldestPatientsOnDevice
20081120	Added UseEscapeStringConstants and DoubleBackSlashToDB
20081124	restrict PanicKillOff to 10 runs (to stop when no patients left)
20090821	Added new FileExists function that uses stat; maybe does not try to mount tape or disk to early
20090926	MakeListOfOldestPatientsOnDevice returns newest if Max<0 SelectLRUForArchival always use new code (use KB<0 to select MRU); Default MakeListOfOldestPatientsOnDevice use AccessTime to emulate old code
20091231	Changed char* to const char* for gcc4.2 warnings
20100111	Merged
20100120	Fixed two const issues detected with ms8
20100124	Use MyGetPrivateProfileString
20100309	Added double parentheses (gcc4.2 Warnings)
20100309	Changed int to unsigned int, commented out unused variables and routines (gcc4.2 Warnings)
20100619	Added UNUSED_ARGUMENT.
20100717	Merged
20100901	Added IgnoreMAGDeviceThreshHold
20101121	Added ArchiveConverter0 (1900)
20110105	Do not stop deleting on single error; added MoveDeviceConverter0 (2000)
20110105	SelectSeriesForArchival: selects data older than age days (age>0) or younger (age<0) from device
20110106	added kb limit to SelectSeriesForArchival; Added moveseriestodevice
20110106	fixes in series code and new MakeSafeString; #if code to allow select on AccessTime instead of SeriesDate
20110119	Pass PDU to some archiving code as script context
20110320	Added MAGDeviceFullThreshHold, system will only write to device if more than # MB avail (def 30)

20110603 Fully init vr used for MakeSafeString
20110606 RecompressPatient also changes filename if script (ArchiveConverter0, MoveDeviceConverter0) passed
20110904 Fixed leak in InitializeDeviceTable (occurs in read_ini command)
20120723 Fixed string overflow found by bcb in MakeListOfLRUPatients
20130817 TestFile will uncompress all read data to test it
Spectra0011 Wed, 5 Feb 2014 14:36:36 +0000: Fix cppcheck bug #4 (strncpy termination)
Spectra0010 Wed, 5 Feb 2014 11:54:40 +0000: Fix cppcheck bug #3 (and others in same function)
20140215 Fixed potential Patlist memory leaks; and also always free PatientIDList in calling;
Spectra0018 Thu, 6 Mar 2014 15:43:54 -0300: Fix mismatched new/delete in device.cpp
20150629 Use configurable table names for sql queries
20150730 Expose KeepFile parameter of ModifyData
20181115 Changed default of MAGDeviceThreshHold to 0
20191221 Fix MakeListOfOldestPatientsOnDevice for no device passed
20240922 Allow xxThreshHold and xxThreshold (3 times)
20260215 Fix parsing of tm_mon in MakeListOfSeriesOnDevice; affects selection of series by age
20260907 Pass lenghts to DICOM2SQL functions and MakeSafe functions

DBSQL.CPP (part of DGATE.EXE):

19980321: Changed ObjectFile and DeviceName field length to 250 for dbf compatibility
19980321: Added define TRUNCATEFIELDNAMES for DBF compatibity (apply in makefile)
19980322: Added run-time check on DbaseIII (should also be added in parse.cpp somehow)
19980325: Added TruncateFieldNames entry in dicom.ini to allow DBF compatibility
19980327: Made MaxFieldLength configurable
19980327: Set default event notification to UDP (for personal pacs)
19980407: Added FileCompressMode config
19980409: Check vr!=NULL in MakeSafeString, MakeSafeDate
19990630: Remove also files from MIRROR disks
19990707: Added UpdateOrAddToTable to refresh database contents without first removing
19990707: Cache Updates; and AccessTime with ~31 to allow update times to be the same
19990707 Added fix for Philips PATID; fix cleaning of MIRROR device
19990708 Added (and disabled) stress code for SQL server
19990712 Fixed FIX_PHILIPS; atoi failed sometimes because vr->data not zero terminated
19990827 Added creation of key and link indices
19991117 Added a check on ini-file value of FileCompressMode
20000621 Changed layout of this update-history. Fix: In 'SetString', type DT_UINT32 was treated as DT_UINT16 Added TroubleLogFile and UserLogFile

	When updating PaientRecord, verify the new Name and BirthDate
20000629	Logging of trouble now starts with '***'
20000701	Remove *all* trailing spaces in MakeSafeString before enters database
20000703	Merged changes: made patient change verification table and record name independent and extended to other databases as well; removed trailing before comparison; show patid on all error messages
20000705	refuse inconsistent update of link: show error on operatorconsole
20000707	fixed above addition
20001104	Replaced _rmdir by equaly valid rmdir
20001106	Use delete [] operation for vr->Data
20001128	Fix: protected 'GetFileName' with a critical section.
20010415	Added KeepImages flag to RemoveFromPacs: clear from DB only
20010416	Added ChangeUID routine and UIDMODS table - to allow modification of images
20010418	Changed names of database fields in UIDMODS - did not work on msaccess
20010429	Renamed genuid routine and variables to allow compile in one big file
20010713	Reduced devicename to 32 chars to space space
20010902	Improved UpdateCache to be thread safe and made it longer, no test on image db.
20011109	Made MAG check and database field consistency check case insensitive.
20011115	Replaced 'LIKE' by faster '=' when possible
20011116	Fixed error handling of db entry. It was possible that db entry failed without any message!
20011121	Create indices on ImagePat and SeriesPat if these fields exist
20020403	Do not overrrule the PatientTable with: empty data, or birthdate xxxx0101, or sex other than MmFf.
20020409	made LastPatid non-static
20020409	Removed non-thread safe caching of LastADBE
20020409	Moved entry into UpdateCache to after succesful Update
20020412	Made NCACHE configurable and changed it from 16 to 1024 (8 MB); Set lastfield (limit of #fields) to 20 (was 16) Added checksum code in update cache to make it faster
20020412	Made key fields unique. Reversed writing of db's. In this case a db write fail will still result in a valid db. The db write code is not multi-user safe. A new record may be written at the same time by two processes -> fail
20020413	Set NCACHE to 256, enough for single thread regen Modified another non-thread safe construct
20020415	Fix display of PatientID in 'Inconsistent' error message
20020416	Made UID generator configurable through UIDPrefix in dicom.ini. Made all instances of time unsigned. Note: accesstime in the db is signed int: problem around 2038
20020418	Added TimeStamp, Flags, and Spare fields on all dbs for future use
20020430	Fix in spare fields: name was reserved in some odbc implementations

20020515	Process all db fields; enter (1) Modality into StudyModality
20020517	Modality is merged into StudyModality without size limit (enforced by sql server)
20020518	Skip missing VR's again; max nr fields to 30; fix reading of NULL fields (clear s[][])
20020519	Also skip writing empty VR's (vr->Length==0); made FixPhilips configurable (default 1). Remove / from date to allow writing mm/dd/yyyy into sql server
20020522	Test on empty Modality vr
20020529	Added PRIMARY KEY to key DB fields (needed for replication)
20020529	InitializeTables now has mode parameter (0=normal, 1=simple) Do not make Index for primary keys (is done automatically)
20020609	Added compression modes 3 and 4
20020802	Simplified rmdir code and allow multiple subdirectories
20020804	Use PATHSEPCHAR where possible
20020806	Fix: cleanup entries of refused item in database
20020819	Added better UID generation
20021016	Use patid in SaveToDatabase and GetFileName query (both test for rev5 or higher of the database)
20021017	Allow set of UIDpostfix from extern (-c option of dgate) Removed creation of unused tables
20021020	Added [to MakeSafeString; removed " Note: VR's containing ', ? give spurious inconsistency warning when rewritten
20021028	Also removed dropping of unused tables; reversed table search to image..pat in FindDBE. Made inconsistent birtdate a severe error message (added ***)
20021110	Made date range inclusive (bug reported by Aaron Cann)
20030113	Added PatientQuerySortOrder etc overrides for sorting
20030205	Fix potential empty patient ID and SOP problems in GetFilename
20030321	Extra check on vr!=NULL in SaveToDatabase
20031104	Added \\ to MakeSafeString
20040301	Do not double \\ when allready doubled
20030425	Added DoubleBackSlashToDB control for \\
20040528	Pass patient ID in RemoveFromPacs and Enable KeyOnAll
20040529	Implemented faster delete from database
20040530	Pass a field to query in delete - obligatory for sql server
20040601	Removed enable KeyOnAll - added some more checks in NewDeleteFromDB
20040609	Check for DB revision for fast delete from database queries
20040610	Truncate too long VR's before putting into db; log to pacstrouble
20040623	Fix for non-DBASE datasources in 'UpdateOrAddToTable'
20040626	Added study and series UID to getfilename interface
20040713	Added FixKodak: replace pat 0nnnnnnn with nnnnnnnn
20040722	Defaults for FixKodak and FixPhilips to 0 (!)
20040930	Added multiple UID matching: UID\UID\UID in BuildSearchString (list truncates at maximum length) SetString now returns a char * which is newed (with lots of extra space for MakeSafeString which is done in-place) if Max length is passed 0. DICOM2SQLQuery has no max length anymore

20041003	Trucated printfs of SqlStatement
20041029	Added MergeUIDs routine
20041101	Added NewDeleteSopFromDB
20041220	Fix: in 'RemoveFromPACS', an even PatientID was not zero-terminated !!
20050109	Adapted for linux compile
20050111	Added ctype.h (for mingw)
20050205	Added counters for database activity
20050206	Allow empty DBE in ConstructVRFromSQL: used to get ObjectFile and Device in query
20050401	Added WorkListDB and WorkListTableName
20050404	Dicom types DT_START/ENDSEQUENCE are ignored during table creation/adding to table
20050414	Allow undefined worklist database; Delete patient will delete worklist entries as well (but needs at least one image)
20050417	Delete from DB will also delete worklist as patient goes
20050826	Added mode 2 for initializetables: clear/create worklist only
20050831	Mode 0 and 1 will now not delete worklist if it contains data
20050831	VerifyIsInDBE will not return DT_START/ENDSEQUENCE
20050901	Do not call FixImage in SaveToDataBase: is done in SaveToDisk before
20051121	Enabled SQLRealSize because SQLResultLength does not work in PostGres BindField
20051123	Fixed it, and only enable it when #ifdef POSTGRES
20051204	Disabled it, fixed postgres driver instead
20051210	GetFilename returns FALSE for an image that has no filename or device set
20051212	Clear update cache when any records deleted - drastic but safe
20051216	Small fix in above
20051217	Use new VR::ReAlloc method to replace data in VR
20051218	Fix study modality when DoubleBackSlashToDB=1; changed modality search
20051228	Truncate invalid trailing spaces (>1) from patient ID. Fiximage warns to SystemDebug
20060210	Removed order: first remove spaces and then fix the patient ID because patient ID consisting of 14 spaces caused huge troubles
20060220	Check max 50 fields when update; fix Inconsistent check for DoubleBackSlashToDB
20060607	Fix character translation for entering *?%[' into sql using MakeSafeStringValues. Fix consistency check for these characters as well (thanks Robert Chrzan)
20060607	Added "not null" to "PRIMARY KEY" to satisfy Sybase (thanks Marcin Litoborski)
20060618	Added not null to UIDmods as well, unified case of DICOMWorkList table name (may be done for other tables as well) (thanks Marcin Litoborski)
20060618	Remove " added by MakeSafeStringValues prior to inconsistency check (thanks Robert Chrzan)
20060621	Increased size of s from [50][255] to [51][256] in UpdateOrAddToTable fixes VirtualQuery crash
20060628	AddToDatabase has JustAdd parameter: skip one unnecessary query

20060706	Replaced faulty new vr construct when doing consistency check: faulted on Linux
20061213	Protect Clear_UpdateCache with critical section Fixed nasty bug in NewDeleteFromDB. MergeUIDs, NewDeleteSopFromDB: Query without bindfield overwrites previous bound strings!
20070123	Fixed GetFileName for patientid with '; Recoded some of the inconsistency checking: now no failure on patient ID (link) with '
20070131	Fixed GetFileName for all patientid's ;->>>>
20070201	Fixed (unused) UpdateAccessTimes for weird patient IDs
20070210	Added CheckDuplicates to UpdateOrAddToTable: used on DicomStudies to catch inconsistent patientID Enabled KeyOnAll on UpdateOrAddToTable: only delete exact records (needed if inconsistent patientID)
20070308	Changed to set patient ID to 0 for anonymized patients
20070315	Merged; also noted that changed possible use of AND at start of sql where
20071027	Also truncate too long date fields with error message; added AllowTruncate: if sql name in comma separated list: warning only else ***error
20071118	Adapted for 64 bits (use SQLLEN for BindField)
20080302	Fixed case of DICOM table names
20080319	Fixed typo in above change; fixed worklist delete for patients with space in ID
20080817	Added WorkListReturnsISO_IR_100 flag (default 1)
20080818	DbaseIII check now uses DB flags, not PATHSEP in datasource name; Added experimental DT_MSTR: multi-value entry, e.g. query on 'PET' matches 'PET\CT' if studymodality is given type DT_MSTR instead of DT_STR. Note: not implemented for DBASEIII
20080819	Added warning when querying DT_MSTR field on dbase
20080902	added EnableComputedFields (default 0)
20080910	Added create Patient ID for 0 length ID (old Picker CT)
20080910	Missing patient ID is now not filled with "0" but with PatientName + Date
20081104	Fixed crash in UpdateOrAddToTable due to missing BindField (1, ...)
20081120	Strip all trailing spaces of modality prior to merging: some scanners add more than 1; Added UseEscapeStringConstants
20081124	Blocked RemoveFromWorld when 0 images found for safety; default SQLServer to "" = black hole
20090216	Added ChangeUIDBack and ChangeUIDTo
20090616	Create index for UIDMods on OldUID; protected UIDMod functions with ChangeUIDCritical; Convert ** query field to *; old efilm version seems to create those
20090616	Include file stuff
200912308	Merged changes by Bruce (bitsltd)
20091231	Changed char* to const char* and cast time_t to int for gcc4.2 warnings
20100111	Merged
20100123	Added DT_FL and DT_FD types, added swapping in ConstructVRFromSQL, and fix DT_UINT32 and DT_UINT16 there, size is 4 and print as %u

20100123 fixed typo for Linux compile Time -> time
20100124 fixed typo in ChangeUIDBack
20100124 Use MyGetPrivateProfileString
20100309 Added double parentheses (gcc4.2 Warnings)
20100309 Changed int to unsigned int, commented out unused variables (gcc4.2 Warnings)
20100324 swap for big endian only.
20100619 Added #ifndefs (gcc4.0 Warnings) and UNUSED_ARGUMENT
20100717 Merged; but still use deprecated atof as change would not compile
20100726 Added cast at atof to supress warning
20100802 Added SUBMISSIONS table
20100816 Allow dicom.ini and other files to be moved.
20100816 removed (a) from #ifndef EnterCriticalSection(a) etc
20100818 Merged jd SUBMISSIONS table
20100823 Merged and simplified basedir logic
20101121 Do not make AccessionNumber primary key in worklist
20101212 Made FixKodak global
20101227 Added \ prior to _ in query value
20101229 Modified _ to [_] etc; presence of [now also forces LIKE
20101229 % -> [%]; _ -> [_]; [-> [[];] -> []]
20110105 Moved local routines to vrtosql: MakeSafeString, DICOM2SQLQuery, BuildSearchString, BuildColumnString
20110105 Use MakeSafeStringValues for exact match; added DICOM2SQLValue
20110105 Removed SUBMISSIONS table
20110106 Fixed regen crash due to missing vr==NULL check in MakeSafeStringValues
20110111 Extended check for vr in MakeSafeStringValues
20110115 Added DeleteUIDChanges
20110214 MakeSafeStringValues 20110111 change broke dbextract; fixed now (return '' if vr invalid or empty)
20110326 Fixed crash in SetString on findscu --key 0010,0010 --key 0010,0020 127.0.0.1 5678
20110419 Added sequences to MakeCopy (to fix bug: "save to" did not write sequences)
20110603 Fully init vr used for MakeSafeString
20120214 Added WorkListReturnsISO_IR to also allow setting 192
20130806 Added FixID (default 1), set to 0 to disable any ID fixing, data without patient ID skips write to patient table - experimental
20130807 Worked on accepting data without patient ID if AllowEmptyPatientID = 1
20130808 Added substitution of patient ID for database purpose if AllowEmptyPatientID = 1
20131013 Default TruncateFieldNames set to 10
20140309 ChangeUID functions leave empty UID as is and escape '
Spectra0015: Thu, 6 Mar 2014 15:34:35 -0300: Fix mismatched new/delete in dbsql.cpp
20150902 Added NewDeleteDICOM and NewModifyDICOM
20151122 Updated progress information
20160108 Updated UIDMods table and ChangeUID calls to support staged anonymization

20160111	Undefined stage becomes (empty)
20160115	Olduid may no longer be primary key, allow stage=NULL and stage=""
	ChangeUIDTo allows "" for NewUID, generates UID then
20160124	Optional Type for ChangeUIDBack; add Annotation to UIDMods database
20160716	Detect UIDMODS without stage option and if so fallback to unstaged anonymization
20161120	Fix fallback to unstaged anonymization, passed incorrect " value
20170419	Fixed merging code (MergeUIDs), added stage (merge) if stage in database
20171010	Fix case of database table names
20171122	Added DT_ISTR (case insensitive query string)
20190320	Added conversion from ISO_IR 100 to UTF8 in MakeSafeStringValues
	Setting UTF8ToDB default 0 for now
20190322	Fixed that; added backwards conversion as well (WIP)
20190423	Added separate UTF8FromDB flag
20190914	Cache changeUID and changeUIDTo (UIDCache); accelerates anomymisation enormously
20191011	Fixed this for non-staged operation
20191019	Extended TempString to 1024 to avoid buffer overrun
20200311	Make sure progress logs inactive even in case of error
20200314	Calling ChangeUID with "" for OldUID clears the UID cache
	Added QueriesReturnISO_IR flag
20201029	Allow passing db into ChangeUID
20201031	Added mods_joint index
20201110	Also added mods_back index for de-anonymise
20210930	Added joint indices e.g. idx_patientid_studyinsta; Stage #xx uses 112 bits MD5
	dbUIDPrefix[0,24]+MD5(dbUIDPrefix+Stage+UID)
20220625	Fix joint indices code; passed wrong table names for Series and Image
20220829	Fix joint indices; passed UniqueLink instead of UniqueKey
20231122	Avoid .0 sequence in UIDs generated by #stage anonymization
20240103	Maintain typecodes in MakeCopy
20240924	Added \n after all Progress.printf output
20260811	md5 now has 'correct' flag; set for lua call, not for UIDs for backwards compatibility
20260906	Use VR->GetString
20260907	Pass lenghts to DICOM2SQL functions and MakeSafe functions
20260907	MakeSafeStringValues no longer uses SetString and checks length, move SetString out of here
20261012	The above change lost handling of binary tag values, reintroduced (SM1312, Mahesh)
20261104	Limit potential LastPatid out of bound copy (Marek Figielski, vanilla pl)

VRTOSQL.CPP (part of DGATE.EXE)

20000629	Logging of trouble now starts with '***'
20010330	Added a few debug printf's

20010420	Fixed memory leaks in all query levels
20020519	Clear BindField result strings before reading (NULL does not read)
20021028	Restructured queries to give lowest level of de-normalized databases. Fixed sorting on PatientName in denormalized study query
20021030	Reversed this again apart from study level because SQL server becomes very slow
20030113	Added PatientQuerySortOrder etc overrides for sorting
20030114	Added in querycolumns (even if already present); tested for SQL server, requires testing for other datasources
20030122	Remove unused entries from Tables string in queries
20040930	Started adapt such that query strings etc and not limited in length. For now: query string max 8192 (here and in odbci.cpp); sql statement max 16384 (in odbci.hpp) Enough for query with one multiple values UID of about 100 images (list truncated if too long). Added safestrcat protection of SearchString
20041003	Truncated debug prints, malloc strings at image level. Analysed string lenghts; limited 'records =' debug log
20041013	Used MAXQUERYLENGTH
20050107	Removed UNIX flags: solve difference in database interface
20050206	Image query can send filename and device in 0x9999,0x800 / 0x0801
20050401	Added QueryOnModalityWorkList; - todo - put selected items into sequence 0040,0100
20050404	Take query for Scheduled Procedure Step from sequence, put results into sequence
20050414	Made sequence unfolding for worklist more generic - accepts any number of and nested N=1 sequences. This is correct behavior for query input, but limited for query results
20050417	Removed unused variable
20050831	Fixes in worklist code: is ok for all OFFIS tests except 1 (empty seq not returned) and 10 (undef non-empty seq takes one entry from higher level) - good enough for initial release?
20050901	Fix for test 10: allow undefined sequence in query
20050907	Merged change by Hans-Peter Hellemann: fix missing max() macro
20051229	Debug log show records of all queries. DumpVR only left in worklistquery and shows sequence layout
20051230	Removed 2 forgotten dumpvr's
20050103	Added debug info from testing phase inside nested sequences for modality query
20050211	Added empty required modality sequences 8,1110 and 8,1120 when not there
20050224	Fixed modality worklist query: empty result sequences were not handled correctly (Thanks Tony Tong)
20050311	Worklist change was tested OK with Agfa (thanks Frank Grogan), cleaned debug log a bit
20060607	Fix crash when coding empty sequence as last item in worklist query (thanks Francois Piette)
20061219	Small fix in layout debug log
20071118	Adapted for 64 bits (use SQLLEN for BindField)

20080817	Fixed bug found by larc: worklist sql syntax error (fields start with ,) when 1st item is sequence; Fixed bug found by Alberto Smulders: sometimes sequence level in response would not come down; The problem was that a higher levels the reported sequence level was inconsistent with the 1st level; Changed CodeSequence stop criterium and level coding for deeper levels; now works with varies sequence combination; Added WorkListReturnsISO_IR_100 flag (default 1)
20080818	DbaseIII check now uses DB flags, not PATHSEP in datasource name
20080901	Implemented 'Number of Patient Related Studies' (0x0020, 0x1200) etc
20080902	Fixed that option for VirtualServers; added EnableComputedFields
20080905	Added void* cast for deivr change
20081016	Fixed for WC compile
20081121	Fixed ISO_IR 100
20090930	Fixed ImageQuerySortOrder: crashed on C-MOVE, because sortcolumn was inserted before the filename
20091005	Fixed ComputeField: return VR was used during cleanup
20091231	Changed char* to const char* for gcc4.2 warnings
20100111	Merged
20100309	Added double parentheses (gcc4.2 Warnings)
20100309	Changed int to unsigned int, commented out unused variables (gcc4.2 Warnings)
20100706	Init Level
20100717	Merged
20100822	Delete 9999,0802 virtualservermask control VR from searches and pass it to ComputeField
20100823	Fixed compile for ms8amd64
20100901	Rephrased "Failed on VR Search...."
20101003	Delete 9999,0900 script control from queries
20101120	Delete 0002,0010 transfer syntax from queries
20101127	Added CountOnly mode to accelerate e.g., NumberOfStudyRelatedInstances queries
20110105	Pass database to MakeSafeString to allow db_type dependent processing; use LIKE only when needed
20110105	Moved local routines here: MakeSafeString, DICOM2SQLQuery, BuildSearchString, BuildColumnString
20110603	Fully init vr used for MakeSafeString
20110605	Allow ' *' for query
20120214	Allow WorkListReturnsISO_IR_100 to be any value (e.g., 192)
20120422	Fix search in DT_MSTR with embedded _ to use =, was a LIKE that failed for MySQL
20120624	Fix DT_MSTR for DoubleBackSlashToDB (mysql and pgsql): requires 4 backslashses (!)
20120701	Fix in BuildSearchString for UseEscapeStringConstants for DT_MSTR and DT_DATE
20131013	DT_MSTR warning for DBASEIII reports now to console
20131017	Put the changes of 20120701 back because dgate fails for PatientID with '_'
20171122	Added DT_ISTR (case insensitive query string)
20190321	Added optional conversion from ISO_IR 100 to UTF8 in MakeSafeString

20190322	Fixed that
20191019	Removed sorting for CountOnly query (SQL fails on postgres)
20200125	Accept 9999,0c000 ConquestImageQueryOrder (use field name, is truncated to 10)
20200314	Implemented QueriesReturnISO_IR flag
20220815	Implemented sorting for all queries except Modality, properly sort on Number fields
20220817	Private tags for query limit (9999,0c01) and offset (9999,0c02), report sorting
20220820	Overhaul of sorting code
20230620	Fix sorting code for PostGres; use CAST and pass expression to columnstring through OrderExp
20250814	Prepend TableName to sort field in ColumnString and sort string in OrderCalc
20260906	Use VR->GetString
20260907	Pass lenghts to DICOM2SQL functions and MakeSafe functions
20260907	Move SetString here (only used here) and changed interface to return size

DPRINTF.CPP (part of DGATE.EXE):

20000211	Removed MajorEvent and MinorEvent instances of 'Debug'. Cosmetics. Added UserLog and TroubleLog. Added timestamp option. Added CriticalSection when printing to file or stdout.
20011110	Post release 1.3.10: keep log files closed while working
20021027	Avoid crash when logfile cannot be opened
20041003	Note: max 1200 chars (use %.1000s to print long strings)
20060618	Define _SH_DENYNO if needed
20070105	Added timestamp for linux users (thanks, Mark Pearson)
20070406	Use reentrant ctime_r and localtime_r when available
20070408	Protected entire .printf() with global critical section
20070712	Closed/opened critical section where recursive call to printf would hang linux version with sqlite
20071120	Use fputs instead of fprintf at end: otherwise % removed
20080821	Fix for Solaris SUNwspro compiler
20090620	Include file stuff
20091231	Changed char* to const char* for gcc4.2 warnings
20100111	Merged
20100125	Removed linux warning
20100309	Removed Windows only variable from unix build.
20100619	Added #ifndefs made Port a local lPort (gcc4.0 Warnings)
20100717	Merged
20100816	removed (a) from #ifndef EnterCriticalSection(a) etc
20150902	Added Progress socket
20160221	Made print buffer much larger
20181219	Added OnTCP
20260913	If defined use vsnprintf to avoid buffer overrun

DPRINTF.HPP (part of DGATE.EXE):

20000211	Removed MajorEvent and MinorEvent instances of 'Debug' Added UserLog and TroubleLog

	Added bAddTimeStamps member
20011110	Replaced MessagePipeName by FilePipeName Blocked out critical section
20091231	Changed char* to const char* for gcc4.2 warnings
20100111	Merged
20100619	Fix gcc4.0 warnings and prevented coping of classes with pointers.
20100717	Merged
20181219	Added OnTCP

REGEN.CPP (part of DGATE.EXE):

19980327:	put messages in one SystemDebug for UDP message layout
19980415:	changed messages to OperatorConsole
19980605:	Need to add regen for optical devices and cachedevices !!!!!
19981218:	temp use pdu.load
19990108:	Replaced PDU.Load by LoadImplicitLittleEndian in RegenToDatabase
19990109:	Set HeaderOnly flag for LoadImplicitLittleEndianFile to TRUE. Added regen of CACHE and JUKEBOX devices; NOTE: full regen imposes name restrictions on JUKEBOX and CACHE directories
19990117:	Filenames with .v2 are assumed raw; added extension .dcm for chapter 10 format
19990317:	Parameters of LoadImplicitLittleEndianFile have been changed
19990521:	.img files react same as .dcm files
20000629:	Logging of trouble now starts with '***'
20010415:	Added SubDir parameter to regen to allow regen of one directory only
20010416:	Added RegenFile - to allow modification of images
20011109:	Made file extension checking case insensitive
20020409:	Experimental multithread version.
20020413:	Made NTHREADS variable and tested. Time to regen 6900 files about 3 min and 40 s.
20020415:	Tested with new loaddo code by ljz. Note: multithread works and has allowed fixing MT some errors in other modules. However, due to a problem in concurrent db writing (in UpdateOrAddToTable) it should not be used clinically.
20020613:	Removed some warnings
20020802:	Simplified regen code; traverse subdirectories recursively (allow e.g., e-film data format)
20020804:	Use PATHSEPCHAR where possible
20021014:	Exclude directory PRINTER_FILES during regen (contains slices without ID and such)
20030120:	Removed some warnings
20030706:	Attach VRType to PDU for implicit little endian support
20030819:	Allow longer filenames
20040614:	Do not regen CACHE devices; first regen JUKEBOX then MAG (e.g., in historical order)
20050118:	Adapted for LINUX compile
20060628:	AddToDatabase has JustAdd parameter
20070210:	Increased maxvrsize for regen v2 files from 0x400 to 0x4000 -> UIDs were sometimes not found
20070308:	Ignore .DS_Store for DARWIN

20091231: Changed char* to const char* for gcc4.2 warnings
20100111: Merged; fixed WIN32 changes
20120630: Regen now allows files without 3 letter extension
20220206: Allow regen of selected folders/files (pass own * wildcards to RegenDir)
20250718: Added TestDICOM to avoid loading loads of invalid files

PARSE.CPP (part of DGATE.EXE):

19980321: Added define TRUNCATEFIELDNAMES for DBF compatibity (apply in makefile)
19980325: Added TruncateFieldNames entry in dicom.ini to allow DBF compatibility
19980327: Added MaxFieldLength entry in dicom.ini to allow DBF compatibility
20001105: Renamed some enums and variables to allow compile in one big chunk
20010713 Renamed DT_UINTxx to DT_INTxx as temp fix for bug in LEX.CPP
20010829 Undone above change as LEX.CPP has been fixed by ljz
20050107 Added include file gpps for GetPrivateProfileString
20050401 Added WorkList Support
20050404 Added DT_START/ENDSEQUENCE to code sequence in WorkList table
20050902 Added HL7 column to be used for WorkList table
20050908 Fixed pointer error that crashed linux version
20080818 Added DT_MSTR
20100122 Hex2Dec incorrect for uppercase HEX numbers!
20100123: Added FL and FD types
20100125: GetPrivateProfileString -> MyGetPrivateProfileString
20100309: Changed int to unsigned. (gcc4.2 Warnings)
20100703: Merged
20171122 Added DT_ISTR (case insensitive query string)

LEX.CPP (part of DGATE.EXE):

20000822 Created
20000823 Support cases where the input-file is empty or contains only white-space.
20010716 Fix: Allow TOKENs that are substrings of other TOKENs.
20050103 Changed include file to lower case (for linux)
20050108 Removed window.h for linux compile
20050118 GNU C++ knows BOOL etc, do not redefine
20090620 Include file stuff
20100120 Fixed const issue detected with ms8
20100309 Changed int to unsigned int, add ui as unsigned int in for loop (gcc4.2 Warnings)
20100619 Fix gcc4 warnings, improve speed and UNUSED_ARGUMENT.
20100717 Merged

LEX.HPP (part of DGATE.EXE):

20091231 Changed char* to const char* for gcc4.2 warnings
20100111 Merged
20100619 Added no-copy to the classes.
20100717 Merged

LUA_DYN.C (Optional part of DGATE.EXE):

20200212: fix cast for windows/linux

LUA_DYN.H (Optional part of DGATE.EXE):

20200212: fix cast for windows/linux

NKIQRSOP.CPP (part of DGATE.EXE):

19990317 NKI-specific code moved here
19990903 Implemented NKI MaxRowColumn VR in DCO
19990906 Improved implementation of MaxRowColumn
19991022 Changed the root of NKI-made UIDs to the official one supplied by Medical Connections(UK): 1.2.826.0.1.3680043.2.135.1066.xxxxxxxxxx
19991122 Added NKI-CompressionMode 2: safer, with CRC checks
20000131 Regardless the FileCompressMode in Dicom.ini, always send images compressed (mode=2) when communicating with an NKI application.
20001105 Fixed where malloc and new were mixed (vr->data)
20001106 Use delete [] operation for vr->Data
20001106 Temporary fix of BC leak in CompressNKI and DecompressNKI
20001120 Fix bug - vr->data was reallocated without changing vr->length
20001127 Fix: Crashes happened when more than one ServerChildThread' was active. m_pDCO is wrongly shared by all threads !!
20010424 Plugged in faster and safer decompress
20010426 Fixed leak when connection is aborted
20010429 Interleaved CRC computation with compress code (factor 2 faster) Added GetADDO to allow read ahead within calling program
20010501 Merged ljz's change of 20010426
20010502 Added extrabytes pointer to Read and RetrieveOn
20010502 Added vr(9999,0300)=SliceLimit: send at most so many slices
20010502 Changed this vr to (9999,0500)=SliceLimit
20011219 Added extra check in case other manufacturers than NKI use VR (0x7fe0, 0x0010), such as ACUSON
20020317 Replace true by TRUE
20020415 Added error handling on ProcessDDO
20020429 fixed reporting of number of complete slices (now starts with 1) return cancel status if C_STORE failed
20020609 Added compressor modes 3 and 4
20020609 Added VR (9999,0600): MaxCompressionLevel (default 2) Note: This level (max of 4) is also used when downsizing
20020613 Exported DecompressNKI and CompressNKI
20020619 Damn! ELSCINT uses (0x7fe0, 0x0010) too (see modification on 20011219). Extra check on zero-length pixeldata

20020930	Fixed SliceLimit VR
20021016	Removed __BORLANDC__ language construct - to fix downsize with BC55
20021115	Added Generic style retrieve classes; print error messages from c-move
20030522	Added function ComputeCRC
20030605	Fix in DecompressNKI: dgate crashed when DCMTK's 'storescu.exe' wants to send an NKIcompressed image to dgate; it refuses to send the pixeldata!
20030701	QualifyOn now also has compression parameter; transfer syntax work in progress
20030703	Tested recompress functions
20030704	Disabled decompression in ProcessDDO for non-nki clients; is done by recompress. When downsizing use DecompressImage(); also supports JPEG; Removed MaybeRecompress. Recompression for NKI clients only when downsizing; otherwise as specified in acrnema.map
20030705	Moved recompression out of ProcessDDO into StandardRetrieveNKI::Read. Skip recompression to same level as incoming
20030706	Optional filename parameter for recompress (not used yet); set env for offis tools
20030706	Attach VRType to PDU's for implicit little endian support
20030709	Removed DCMDICPATH; is not needed
20030819	Allow longer filenames
20030905	Note: recompressfile; DecompressImageFile and CompressJPEGImageFile do not allow spaces in filename
20040401	Added Changed and ActualMode flags to compress routines; only give compress message if something changed
20040401	Set maxcompression to 4 for NKI send
20040403	Added own SaveDICOMDataObject as in dgate.cpp
20040406	Also copy TypeCode in DecompressNKI when converting (0x7fdf, 0x0010) to (0x7fe0, 0x0010); Make TypeCode of (0x7fdf, 0x0010) OW instead of OB, because OFFIS refuses to compress OB
20040406	Always use EXPLICIT syntax for jpeg, fix v2 always use DUMP; Use -F +ti option for dcmdjpeg for writing to v2: creates raw dump, implicit; Refuse to jpeg compress V2 files and images != 16 bits; \n is all messages; Fix error handling of CompressJpegImage
20040530	Removed unused variable
20040722	Added "nj" compression: leaves JPEG as is; else MAXNKICOMPRESSION
20041101	Added built-in JPEG and RLE decompressor
20041102	Fix problem with external JPEG compression: clear transfer syntax prior to save for OFFIS tools with DICOM_CHAPTER_10_EXPLICIT
20041103	Added k1,k2,k4,k8 compressors: downsize to 1024,512,256,128 pixels if bigger to start with
20041112	Called AE SERVER~xx in C-MOVE lets xx override outgoing compression as well (e.g., call CONQUESTSRV1~k4 to always get images downsized to 256x256)
20050102	Added NOINTJPEG flag to allow compile through total.cxx
20050103	Changed include file to lower case (for linux)

20050108	Adapted for linux compile (work in progress)
20050109	Added configurable TCPIPTimeOut
20050118	replaced thread local storage under linux with variables in object
20050119	added rudimentary support to start external (de)compressors under linux
20050121	Changed filename to lower case
20050122	Improved external jpeg support under Linux: load dictionary, wait until ready
20050130	Added To8BitMonochrome and ToGif
20050204	Small fix in ToGif for non-square images; also interpret RescaleIntercept as float
20050205	Added counters for compression activity
20050206	Optimized downsizing: do not decompress if no downsizing to occur
20050206	Note: replaced thread local storage under linux with variables in object is incorrect. Under linux, the server now can also serve one at a time. Fix for color to gif; added limited auto scaling in 16 bits to gif.
20050211	Now really removed need for thread local storage
20051210	Added "vX" compression (same as as is)
20051217	Use system() to call on offis apps in linux (now works)
20051217	Use new VR::ReAlloc method to replace data in VR; fixed 2 float warnings
20051229	Fixed several leaks in (jpeg)compression code; changed alloc for nki compression
20051230	Added +sr option to dcmcjpeg: compress without changing rescaleslope/intercept This option is required for our viewers: slices must all have same rescale
20060219	Removed warning in writegif
20060222	Added extra checks (not on ID strings) to pass as NKI compressed data
20060311	dcmcjpeg opts string got truncated (thanks Rainer Libowski) fixed unused CompressJPEGImageFile (wrong exe called) external decompress temporary files now in printer_files (thanks Rainer Libowski)
20060324	Added StripGroup2 option to recompress; strip group 2 from outgoing c-stores if not compression "as" or "is"
20060328	Use IsAbstractSyntaxAccepted(iUID) to test if host accepts image
20060402	Fix crash when recieving or dropping jpeg compressed color images. Consider not removing transfer syntax (0x0002, 0x0010) prior to dcmdjpeg/dcmcjpeg. Would fix problem with external decoding color jpeg images
20060402	Changed IsAbstractSyntaxAccepted(iUID) test back (thanks Andrej Savelov)
20060405	That was not the problem
20060618	Tested IsAbstractSyntaxAccepted - seems to work. Removed need for min()
20060619	Do not remove transfer syntax before decompression (20060402 suggestion). Maintain original object when decompression fails, changed wording of message.; Only complain about internal decompressor for jpeg

20070104	Export automatic SaveDICOMDataObject
20070113	Never delete transfer syntax (was left in CompressJpegImage, solves coding error in jpeg store). Tested with $c server debug command
20070210	Export MaybeDownsize and check on 0 for passed size
20070307	Added several debug prints in retrieve, e.g. at bail out because connection dropped
20070308	removed #include <wait.h> from DARWIN
20070314	Send 0000,1030 (MoveOriginatorAE) and 0000,1031 (MoveOriginatorMessageID) in SS->Write as result of Move
20070315	Merged bcb DARWIN stuff; Set TCPIPTimeOut for PDU that moves images
20070316	Added (color) ToBMP for convert_to_bmp; added level and window to ToGif and ToBMP
20070407	Use ~p1..9A..Z to override C-MOVE port (adds 1..36 to port number)
20070902	WriteGif now cpp
20071027	Added quotes around filenames passed to dcmdjpeg and dcmcjpeg: avoids errors with spaces in paths
20071101	Enabled JPEG compression and decompression of non-16 bit data
20071104	Added DecompressNon16BitsJpeg (default TRUE)
20071105	Restore image when dcmc/djpeg failed to start
20080103	Added mode 'uj': leave jpeg as is, otherwise uncompress Added DecompressImage to recompress()
20080820	Solaris fix (do not use variable name SS)
20081116	Adapted for very large objects (use unsigned int for length)
20081201	Added JPG converter
20081203	Enabled internal decompressor for color, added frame extraction for jpg etc; Add frame extraction control = 0x09999,0x0201
20090209	Added QueryMoveScript callback; removed unused variable
20090325	Added RetrieveResult converter, impact on performance to be tested
20090412	Changed jpeg encode_image mode to correct BGR RGB mixup
20090513	Added modes 's0' to 's9' call script CompressionConverter0 to 9
20090518	Added modes ka, kb and kc to downsize to 64, 32 and 16
20090921	Added ExtractFrames
20090927	Stop jpg compression for PR SR and RT
20091231	Added HAVE_LIBJPEG (version 6c!) and HAVE_LIBJASPER for external library support (beta for now) Changed char* to const char* and cast time_t as int for gcc4.2 warnings
20100111	Fixed downsize for 32 bits pixel; bcb const; cast of Time() to (int)
20100112	Merged
20100113	A few more errors in downsize for 32 bits
20100116	Fixed DecompressImage compile error if HAVE_LIBJPEG is defined
20100118	Added one missing else in CompressJPEG2K
20100119	The else was not really missing; added some const
20100120	Catch jpeg2000 configuration if HAVE_LIBJASPER not defined

20100121	Blocked out old jpeg decompressor if HAVE_LIBJPEG, removed color checks as both decompressors do color now; Made lossy to lossless switch a warning not error in CompressImage; Set mode to '1' instead of 1 after switch
20100122	Note: the HAVE_LIBJPEG code supresses RLE support
20100122	Added experimental C-CANCEL support for all C-MOVES
20100123	Added counters for jpeg2000
20100124	Added GetNumberOfFrames
20100125	GetPrivateProfileString -> MyGetPrivateProfileString
20100126	Include gpps.hpp
20100207	Fixed ExtractFrame(s) for frames packaged into pixel data without sequences
20100209	Run RetrieveResult also for non-nki clients
20100210	Fix memory leak
20100214	Merged
20100223	Combined DecompressImage and DecompressImageFile Add FUJI_FIX for evil LittleEndianImplicit jpeg compressed images.
20100224	Added libopenjpeg to use in place of Jasper, fixed more warnings (-Wall)
20100227	After 1.4.16alpha3: crash when jpeg compressing RT object
20100330	Frames to LIBJPEG, JASPER, and OPENJPEG
20100619	Many fixes for leaks, allow both Jasper and openJPEG as a dicom.ini choice (not finished).
20100703	Merged; snprintf to _snprintf
20100706	Merged, replaced _snprintf with memcpy.
20100721	Merged back; fixed a few ascii to int conversions with atoi
20100723	Merged bcb fixes in new version of ToJPG
20100728	Installed RLE support with HAVE_LIBJPEG, used new deivr Get's and ChangeVR's
20100815	Merged; do not use GETUINT8 for US type; added space =TRUE to setting PixelSpacing; Simplified DecompressRLE
20100815	Fixed bug 30 in t=2127: YBR_FULL_422 images not passed to dcmcjpg
20100823	bcb moved that check to the right place
20100824	Pass local VariableVRs to script engine
20100826	bcb fixed lossy jpeg2000 for signed data
20100901	bcb Added fix for PlanarConfiguration=1 data
20100905	Removed file functions: now RecompressFile uses Recompress
20100905	Merged; Added UseBuiltInJPEG flag
20100914	Fixed RLE decode for frames, added Deplane, DecodePalette for regular and segmented palettes
20100918	Attempted merged (very difficult as fixes were made in older version)
20100920	Fixed warnings
20100922	Merged
20100928	Fixed ExtractFrame(s) for NKI compressed data
20101003	Added 9999,0900 script
20101004	Use updated gif codec; started on animated gif
20101009	Protected gif coder for out of memory
20101018	Swap BGR to RGB for ToJPG
20100920	Fixed j2k decompressing of j2k file instead of just the stream (used by Accusoft Pegasus).
20100923	ToJPG can be used to create MPG files using external tools

20101116	Add UL, UB, UI, and UE compression to fix big endian recieve, merged, warnings
20101121	Merged
20101220	Fixed color swap for jpg and bmp; fix deplane and depalette are called when needed
20101227	Fixed 'un' in bcb 'ui' etc code in recompress
20110106	Fix ToBMP for linux 64 bits (used long)
20110119	Use ExtendedPDU_Service to pass scripting state
20110320	Fix downsize & tojpg when #bytes in image is odd; Only apply RescaleIntercept for CT in tojp
20110326	Increased temp string in linux ExecHidden that caused decompress crash
20110326	Increased temp string in linux ExecHidden that caused decompress crash
20110413	Allow test of jpeg or rle decompression even if no group 0002 data
20110414	Moved jpeg decompression height errors to SystemDebug
20110419	normalized line endings; taken out superfluous prints
20110423	Fixed "UJ" broken when UI etc were introduced
20110502	always write bitstored 0x0028,0x0101 when writing highbit 0x0028,0x0102
20110904	Fixed J1 and J2 distiction
20110926	Added DcmConvertPixelData for tomono and crop
20111010	Fix in J1 and J2 distiction fix: '2' was not translated into 2 invalidating subs. tests
20111011	Fix in SaveDicomDataObject (archive): 'cannot rewrite .. in v2 format' led to a double DDO->Free
20111018	Added TempDir ini file option
20111022	Added private move command option 0x9999, 0a000 ConquestMoveOriginatorAE; let retrieveconverter work with command
20111113	Restored the original float DeYBRFULL code; the modified code did not work; read VR again, is used for deplane
20120214	Allow size==0 in DICOM to image conversion
20120327	Fix LossyQuality entry in dicom.ini for built-in JPEG compression
20120401	Fix in print (crashes when modality not passed)
20120402	Default UseBuiltInJpeg properly to 0
20120624	Set Header (0028,2110) to 01 after lossy compression
20120624	Do not modify bitsstored, highbit and numberofbits after compression
20120628	Some layout of debug prints
20120630	Reverse .dcm check (dicom if not .V2); Pass lossy quality to CompressJPEGImage from compression string
20120723	Fixed 'l' or 'l' to 'l' or 'L' found by bcb
20120918	Fixed comparison with .v2 in SaveDICOMDataObject()
20121208	Block deplane if SamplesPerPixel is not 3
20130218	JPEG compression did not set right sopclass!!!!
20130823	Fixed lossy jpeg compression for 12 bits data
20130920	Corrected the calculation of new pixel spacing in MaybeDownsize
20131013	Default UseBuiltInJPEG set to 1; added quality parameter to ToJPG

20140207	Fixed RLE (signed char 127)+1 gave overflow, now use (int)cCurrent+1
20140209	Fix decompressjpegl here: fix lossless colorspace to RGB
20140219	Added generic DecompressNKI (works for XDR and DCM)
20140309	Catch error if no image VR present in jpeg2000 decompression
20140319	uj and nj now pass MPEG 100, 102, 103; fix in UI; WIP support UJ outgoing
20140608	Blocked MPEG changes for now; fix VR==NUL error handling in To8bitMonochromeOrRGB
20140608	use bitsallocated in ExtractFrame to fix philips enhanced MR
20151024	Fixed out of bounds check of cropimage
20160219	Removed defines of BOOL TRUE and FALSE
20160219	Removed JASPER and OPENJPEG here; now in Bruce's JpegConv.cpp Added CHARLS code; fix lossy/lossless switch;
20160220	Removed dead code
20160221	Added JASPER code back in; openjpeg2 is still buggy
20160229	Use HAVE_LIBOPENJPEG2 define
20160316	Fix autoscale of 32 bits images
20160317	Fully implemented rescale intercept if window passed; removed uint<0 test
20160318	Limit this to slope=1
20160716	Added NKI compression mode 5
20160718	Added experimental BMPStrip function
20160723	Added experimental JpegStrip function; allow multiple columns
20160724	JpegStrip now creates proper array of images
20160905	Fix stripping of space from called and calling: crashed when empty e.g. all spaces
20170304	Fix compile without jpeg codec
20170827	No longer use IU type for transfer syntax must be UI
20170921	Added gamma on display functions
20170922	Small fix
20171009	Added commented test code for crash when c-move is canceled
20180316	Started on C-GET; in same routine as C-MOVE
20181113	Fixed unsigned signed error in RGB conversion
20181123	Changed TransferSyntaxUID back to IU (is in preamble)
20181222	Added WriteGet for C-GET client; results in image information in ADDO
20190114	Set compression to "un" for C-GET (was "" behaved as as-is)
20190602	Disable jpeg compression for <8 bits; adapt To8bitMonochromeOrRGB for other than 8 or 16 bits
20201020	0x9999,0x0b000 splits move e.g. pass 0/2 to only send even, 1/2 to only send odd
20201021	Above VR may be in command OR data; added DCO to CheckObject
20201022	Added DCO to CallImportConverterN calls; read split and slicelimit below QueryMoveScript
20201025	Print reduced number of images actually sent
20200202	Fix intermittent failure of atof(pVR->Data) when Data is e.g. " 1", it reads beyond the array
20200528	Fixed Pivoglot reported use of GetAtoi instead of GetUINT16 to read bitsperpixel

20210114	Enable compression selection for C-GET (do not force "UN") as tested by Chris
20210323	Fix leak after Host " will not accept image
20210325	Outgoing compression with ! e.g. JK! will not propose uncompressed
20210409	Blocked out IARQ for debugging outgoing association
20210516	Blocked out recompressed message - disturbs cgi operation; Note need to accept e.g. 9999,0700 c-move/get commands in data as well as command
20220818	9999,0202 scrubbing +7FE00010,0010 keeps element/group, -7FE00010,0002 removes those, -Private,7FE0 removed private and pixel data; Accept more move/get controls in query
20220819	Fixed buffer overflow and leak in scrub code
20220820	Also allow scrub on typecode e.g. -SQ,OB,OW,OF,0010,00080008
20220821	Optimized scrub a bit; do not test on unused features
20230607	Set cget back compression to 'un'; acceptedCompression not set
20240321	(lncoll) Set lut acording to PhotoMetricInterpretation (0x0028,0x0004) in function To8bitMonochromeOrRGB Use Window Width (0x0028,0x1051) and Window Center (0x0028,0x1050) as in dicom object, or BitsStored (0x0028, 0x0101)
20240326	Merged code; accepting all changes by lncoll but reformatted, replaced compile error pow(2,x) by 1<<x
20240511	Added e.g. j#3,150 compression: uses j2 clipping all<150 to zero, and scaling pixels by 3
20240522	Added e.g. n#3,150 compression: uses faster n5 clipping all<150 to zero, and scaling pixels by 3
20240925	Read level and window as float and round to int in convert_to_gif etc
20240927	Fix crash on non-images there
20250216	Implement pixelRepresentation in To8bitMonochromeOrRGB
20250218	Fixed outgoing J7: must propose lossy first, then lossless
20260906	Use VR->GetString
20260912	Read Level and Window and Slope and Intercept in sequence for enhanced object
20260913	At least one CGET must be listed in dgatesop.lst before answering (grideman, nov 2021)
20261030	Luca found that GetVR(0x7fe0, 0x0010) can be NULL before DePlane or DeYBRFULL; now tested
20261104	Avoid out of bound copy into s[64] (Marek Figielski, vanilla pl)

JPEGCONV.CPP (part of DGATE.EXE, Bruce Barton):

20120710	Created.
20130218	JPEG compression did not set right sopclass!!!!
20130226	Replaced gpps with IniValue class, fixed size warnings. Version to 1.4.18a and b.
20131207	add jpeg-ls decode
20160220	Made to compile in mvh's build environment: bcb please check these changes were applied
20121208	Block deplane if SamplesPerPixel is not 3 – in

nkiqrsop

20130823 Fixed lossy jpeg compression for 12 bits data – likely in nkiqrsop

20140209 Fix decompressjpegl here: fix lossless colorspace to RGB – reapplied 20170430

20140309 Catch error if no image VR present in jpeg2000 decompression – in imagedata

20160229 potential issue: calloc/malloc on this side free in opj_image_destroy

20160306 use CHARLS_STATIC and statically link libraries to avoid calloc/opj_image_destroy issue above

20170205 Define guard as extra space for botched compression

20170205 Move image creating inside frame loop of jpeg2000 compression to avoid crash on multiframe
Known issue: 12 bits images with too many bit not error free in jpegLS and jpeg2000

20170208 Check input pixel value against precision; refuse to compress if outside

20170430 Reapplied 20140209 change: lossless RGB jpeg is not YCR coded (was in newer incompatible bcb version)

20170827 No longer use IU type for transfer syntax must be UI

20181123 Changed TransferSyntaxUID back to IU (is in preamble)

20200314 Added JPEGIGNORELOSSLESSJFIFCOLORSPACE flag, ignores color space in JFIF header for lossless

20200722 lossless JPEG compression converts color space to YBR_FULL which is incorrect

20200722 Note: lossless JPEG decompression ignores YBR_FULL which leads to old conquest color images to show green

20201224 Added StopOnJPEGWarnings configuration to fail decompress on corrupted images

20261002 Protect against jpeg length overflow

20261104 Check for invalid image data size (Marek Figielski, vanilla pl)

JPEGCONV.HPP (part of DGATE.EXE, Bruce Barton):

20120710 Created.

20131111 Changed from #include<> to #include"" for Xcode

20131207 Added JPeg_LS

20151203 Moved some dependent defines from total.cpp to here.

20160203 Fix VS 2015 Libjpeg bool redefine.

UNCOMPCONV.CPP (part of DGATE.EXE, Bruce Barton):

20140513 Created.

20190602: Fix To8BitGray and To16BitGray, shifts were reversed

UNCOMPCONV.HPP (part of DGATE.EXE, Bruce Barton):

20140513 bcb created this file.

20190602: Fix To8BitGray and To16BitGray, shifts were reversed

IMAGEDATA.CPP (part of DGATE.EXE, Bruce Barton):

20131224 Created this file.

20160203 Fix error to work with OsiriX JPEG-LS and strncpy warning.
20160619: bcb added sgnd flag
20161204: catch imageVR not present
20190602: Fix conversion, reload after To8BitGray and To16BitGray
20261104: Check for invalid image data size (Marek Figielski, vanilla pl)

IMAGEDATA.HPP (part of DGATE.EXE, Bruce Barton):

20131224 Created this file.
20151203 Moved some dependent defines from total.cpp to here.
20160619: bcb added sgnd flag

NKIQRSOP.HPP (part of DGATE.EXE):

19990317 NKI-specific code
20001128 Fix: Crashes happened when more than one ServerChildThread' was active. m_pDCO was wrongly shared by all threads !!
20010429 Added GETADDO to allow optional read ahead withing calling program
20010502 Added extrabytes pointer to Read and RetrieveOn
20020415 ProcessDDO now returns status (to allow compression error check)
20020613 Added prototypes for DecompressNKI and CompressNKI
20021115 Added Generic retrieve classes
20030522 Added prototype of ComputeCRC
20030701 QualifyOn now also has compression parameter
20030702 added ExtendedPDU_Service
20030704 Changed ProcessDDO parameter to **DDO (for recompress)
20050118 replaced thread local storage under linux with variables in object
20050121 Changed filename to lower case
20050211 Removed need for thread local storage
20090209 Added QueryMoveScript callback
20091231 Added HAVE_LIBJPEG (version 6c!) and HAVE_JASPER for external library support (beta for now)
Changed char* to const char* and cast time_t as int for gcc4.2 warnings
20100111 Merged
20100703 Merged some bcb OpenJPG changes
20100706 Added support for J2K and Jasper
20100721 Merged
20110118 Derived ExtendedPDU_Service from CheckedPDU_Service
20110118 Added lua_State to ExtendedPDU_Service
20110119 Added *VariableVRs and ThreadNum to ExtendedPDU_Service
20110122 Added ExtendedPDU_Service destructor
20160219 Removed jasper and openjpeg stuff here
20180316 Started on C-GET
20181222 Added WriteGet for C-GET client; results in image information in ADDO
20200203 Added LUA51EXTERN option for dynamic loading of lua5.1.dll
20240617 Add PDUSize config to ExtendedPDU_Service for testing

20260908	SM1312+Claude caught that ExtendedPDU_Service CompressionTypes were uninitialized, now set to ""
20261007	Implement AllowOnlyMappedLocalAE and AllowOnlyMappedRemoteAE
20261008	Fix above for passed *A having spaces after the AE
20261010	Call now with IP passed and *A without spaces
20261010	Added CheckIPofRemoteAE; for now only works for numeric IP4 address in acrnema.map

ODBCI.CPP (part of DGATE.EXE):

19980415	Blocked one error message
19990628:	experimental locking call
19990628	temp defined DB_DEBUG and introduced experimental statement options
19990707:	Undefined DB_DEBUG and removed statement options
19990827:	Added CreateIndex
20000629	Logging of trouble now starts with '***' */
20001105	Run-time load ODBC routines for BC and WC
20001128:	Added InitializeCriticalSection in 'Open' and DeleteCriticalSection in 'Close'
20010829:	Enabled DB_DEBUG to show db errors in verbose mode
20020412	Use SQLExecDirectWithRetry to retry in case of any error (deadlock=1205). Added CreateUniqueIndex function, and GetLastError. Ignore error from unique index to make multi-user safe.
20020413:	NOTE: A SINGLE DB MAY NOT BE USED BY MULTIPLE THREADS.
20020417:	Extended deadlock wait time to about 1 min for safety
20021014:	Added built-in dbf support for stable ODBC less-operation Note: requires fully de-normalized database; notes: in dbsql, first bind row not set; in vrtosql; debug query print with %s in search crashes
20021016:	Added about 1 MB of in-memory hashed index in patient ID for all tables; speed OK to 10.000 objects; pack db on server start (for speed it is wise to keep DBF files on local harddisk)
20021017:	Made NeedPack a global for control from dgate; fix base_trunc; fix in Updaterecords; fix first num field in AddRecord
20021020:	Made querymodes an array, so that each query field can be key, key% or %key% ; Use querymode also when hashing the entries (part of db entry); Fix process_escape for " and \[and also use it before dbase_write
20021028:	Set open retries shorter for normal readonly access
20021030:	Match alternative patientID fieldname such that built-in DBF queries work
20021113:	Added <= comparison in dbase_query (used for date comparison)
20030113:	Do not use () in sort order when multiple columns specified
20030128:	Added alternative field names for series
20030321	Also handle 'write lock' for M$Access (NativeError 1205 for sql-server equals -1102 in M$Access). Other dbf-drivers???
20030819	Allow longer filenames
20031104	Added \\ to process_escape
20030425	Added DoubleBackSlashToDB control

20030520	Speedup by fix dbaseIII hashing, setting hashfield was wrong
20030523	Implemented in-memory index to speed dbase queries; added IndexDBF and PackDBF settings
20040528	Fix built-in DbaseIII for > 2 GB; index fixed at 10.000.000 records; Fix problem when spaces in patient ID in index generation
20040528	Added ExtractRecords (dbase III only); fix update/delete for record 0
20040530	IndexDBF gives MB extra to allocate; skip dbf files starting with X; convert normal queries in SeriesInstanceUID or StudyInstanceUID to indexed ones
20040601	Added LongQueryDBF flag: report if query took longer than LongQueryDBF ms (default 1000); Min 20 MB index during regen; allow pack on command (NeedPack=TRUE; DB.Open) Increase query buffer size to 16384 (often reread), pack buffer to 65536
20040605	Optimize speed for huge files, extract max 100000 records; made lockstart __int64; Do not lock for read in extract (is very slow for huge files); Record lock no longer on physical bytes but on rec#; attempt to speed memory index; NeedPack==3 -> force pack
20040606	Fix lock whole file; fix index patient ID database; fix in dbcreate for test
20040609	Implemented fast in-memory locking and enabled for all shared files
20040610	on dbase_create set indexcount to 0; dbase_trunc truncs indexcount
20040612	Put index creation in a thread; server runs (but does not find non yet indexed records) during indexing; implemented indexdbf command NeedPack=4
20040614	Added NeedPack=5: create non-threaded index (for archival options)
20040615	Added warning when index is full; keep indices when creating db
20040930	Added multiple value query; protect length of copy of where string
20041003	Reused very long SQLStatement string for wheres string For lenghts see dbsql.cpp; tructated debug printfs set cols length to 4096; malloc tmp in query at 310000; for length calculation see dbsql.cpp
20041013	Used MAXQUERYLENGTH
20041029	Fixes in multiple query (query string truncated + mode mix problem)
20041101	DB is read only while in-memory indexing of DbaseIII active
20050102	Small modifications to allow compile through total.cxx
20050107	Export NumIndexing to tell dgate when indexing is done
20050116	Adapted for use with LINUX (built-in dbase driver only) Notes: 1) delay poorly implemented; 2) no support for >2 GB
20050118	Detach pthreads to avoid leaks
20050119	Documented rare crash in Fill_Memory_Index
20050124	Added support for huge files under Linux (not suitable for ext2 filesystem); Allow = without spaces in query
20050205	Added counters for db activity

20050206	Small fixes to counters; allow "&" instead of " and " for CGI use
20050905	Postgres code by Piotr Filipczuk checked by mvh, will not affect other operations, but not tested yet (postgres will not compile on my linux system)
20050907	Merged change by Hans-Peter Hellemann: lseek64 not always defined, should be mapped by unistd.h
20050909	Put check for = in query below >=: date range matching failed (Thanks Paolo Marcheschi)
20050911	Removed postgres print statements
2005112	Fixed BindField for postgres - now returns actual and not reserved length
20051217	Maximum locks in dbaseIII driver from 1000 to 100 to speed up qunlock (20% regen speed)
20051218	Respond to -b = NOTHREAD: run server as single process, useful for debugging and profiling
20051219	Fixed slow leak of queryfields for built-in dbase driver
20051230	Put index of DicomWorkList on AccessionNumber
20060219	Start on native mysql driver
20060220	Some more work: get correct length in bindfield; todo: user and password
20060226	Runtime load MYSQL in WIN32
20060313	Use username and password for mysql
20060402	Start index threads with a short delay to give GUI priority to test startup
20060607	Changed escape char processing for sql values (not queries) to match dbsql.cpp change
20060618	Fix for Borland C++ builder
20060628	Moved location of disabled query logging
20060630	Speeded dbaseIII AddRecord lots and linux string handling
20060701	Added and use mysql_fetch_lengths; protect query result
20060702	Tested native mysql driver: does not like fast open/close: clonedb crashed after 4000 or so (avoided now)
20061212	Found critical error in built-in dbase driver sql parser: Adding patient with ID containing certain character sequences will immediately overwrite the whole patient database. Queries with these sequences will return too many records (less dangerous). Issue not yet realy fixed but greatly reduced its likelyhood
20061213	Fixed issue by replacing spaces inside strings in sql statement with non-breaking spaces. Only match on keywords and field names which include spaces; replace with normal spaces in process_escape
20070123	clear NativeError, State and Msg on db.open (e.g. for dbf that does not use them but prints)
20070126	Added missing break in non breaking space field of process_escape: failed on multiple spaces in string
20070201	DebugLevel 4 prints all sql activity\
20070203	Fixed >2GB file support in linux: use O_LARGEFILE and lseek64() - sorry Hans-Peter Hellemann
20070206	Added CreateDatabase (created db and login)
20070207	Removed creation of login from CreateDtabase for mysql and postgres

20070210	Moved debug prints to SystemDebug; removed double log in QueryDistinct for dbaseIII
20070218	Added SqLite (win32 dll version): seems to run now; very slow when sync, very fast async
20070307	Made database type flag local, added Database(type) creator
20770308	Fixed DARWIN ifs, made DARWIN/MySQL auto start. (MySQL is included with DARWIN)
20070315	Merged; changed two nested ifs that had an else that would be wrong
20070406	Use reentrant rand_r and localtime_r when available
20070507	Native mysql does not correctly return empty fields (Steini)
20070702	Fixed above fix; test version for Stephan Winter
20070703	Removed test version code; display mysql connection errors on OperatorConsole
20070705	Added DT_DBASEIIINOINDEX: disables indexing and packing; #define USESQLITE_DLL to load DLL; otherwise use statically linked sqlite3.c; Extented max number of dbf files to 20
20070709	Fixed crash when mysql not started: format error in the error print
20070711	Some fixes to compile with sqlite under linux
20070715	Removed debug print statements for sqlite
20071027	Maybe fix postgres error handling: reset ntuples
20071030	More fixes to postgres error handling: missing returns in PrintLastError
20071115	Fixed SQL database creation for SQL server 2005
20071118	Adapted for 64 bits (use SQLLEN for BindField)
20071124	Removed dangling WHERE and ORDER in SQL server interface when passing "" instead of NULL
20081116	Adapted for 64 bits linux (avoid use of "long", in dbase code and when reading SQL_C_ULONG)
20081117	Allow compile with both POSTGRES and USEMYSQL
20081119	added run-time loading of postgres for WIN32
20081120	Added UseEscapeStringConstants for dbase (is needed only in one place because in other place the E in E'\\...' is igored by the current code)
20081121	Implemented CreateDatabase for Postgres; also try load libmysql64.dll (for easy 64 bit deployment)
20081124	Added DT_NULL (black hole)
20081125	Fix critical section in DT_NULL
20081126	Todo: all realloc of dbase index when full; don't use threads to fill
20090202	Fixed problem of database fail open in GUI after install: XADICOMPatients was never closed, as connected was not set when there were no databases
20090203	Fix crash on SQLite error
20090429	Added libpq64.dll
20090616	Added OldUID as hashfield: indices UIDMods table; increased default index to 10 MB
20090620	Include file stuff
20091230	Merged bcb change
20091231	Changed char* to const char* and added blank[]="" for gcc4.2 warnings
20100111	Merged

20100123	Allow host:port syntax for hostname in MySQL and PostGres
20100125	GetPrivateProfileString -> MyGetPrivateProfileString
20100309	Cast k to unsigned int, commented out unused variables (gcc4.2 Warnings)
20100309	Added retunn FALSE to the end of CreateDatabase
20100309	Added double parentheses (gcc4.2 Warnings)
20100619	Fix gcc4 warnings, improve speed and added #ifndefs and UNUSED_ARGUMENT.
20100703	Merged; but fixed random seed change (initialize static)
20100717	Merged
20100815	Fixed linux compile for SqLite
20100816	removed (a) from #ifndef EnterCriticalSection(a) etc
20101121	use strncpy to avoid access errors in Sqlite where fields may exceed defined length
20101121	Disallow SqLite with DoubleBackSlashToDB
20101129	Filter [x] like sequences in dbaseIII driver process_escape
20110102	retry connect to postgres once; more postgres error handling
20110104	Undone [x] change of 20101129
20110305	Replaced Sleep(555) in linux code by delay(555)
20110319	Normalized line endings
20110502	Added db:Exec
20111113	Fixed leak in DT_NULL driver (SQLStatement not freed)
20120107	Accept 64 bits DLL's also as e.g., x64\libpq.dll
20131029	typo in lPassword
20140629	Allow CONSTRAINT errors in mysql, pqsql and sqlite to deal wih race condition in UpdateOrAddToTable
20140701	Fixed CONSTRAINT for MySQL
20160313	Removed incorrect * in mysql_errno checks
20160317	Initialize th->n on dbase_open; rare accesses invalid index if non-init
20180805	Added SQLiteStartup parameter; defaults to "PRAGMA synchronous=OFF" as it was
20181231	Reset bind type array when binding 1, avoids write into unbound variables
20200119	Hardcode MYSQL_PORT to 3306
20200314	Removed UNENCRYPTED clause for postgres
20201020	Added SQL server 2627 as exception (duplicate index)
20201107	Allow multiple statements for MySQL (flag 65536)
20210509	Reduce ODBC retries to 6 times
20220817	Allow LIMIT and OFFSET to be added to the Sort parameter; some postprocessing for SQL server done; () rule for multiple sort was wrong
20230609	Added retry on SQLITE_LOCKED
20230904	Protect PQsetdbLogin with its own critical section - fixes crash if opening two dbs at once
20230920	Added PostGreSQLStartup and MySQLStartup; only execute all startups when set
20260614	Started on SqLite backup
20260615	Backup copies 64 pages per step
20260616	Backup copies 640 pages per step; performance ssd->raid ~9GB/hour
20260622	Added blocks and delay parameters
20260702	Made it compile without sqlite

20260809	Catch errors of dbase_create (crashed server browser for mixed users)
20260914	Also try to load libmariadb
20261027	dbase open error: errno read directly; no #define _errno errno (with the Microsoft CRT and mingw-w64 errno is (*_errno()), the macro broke every later errno)
20261030	Merged mmd change for new MS compiler

ODBCI.HPP (part of DGATE.EXE)

19990827	Added CreateIndex
20001128	Added CRITICAL_SECTION member of 'Database'
20020415	Added error info, GetNativeError, SQLExecDirectWithRetry and CreateUniqueIndex
20021020	Added built-in dbf support (for stable operation without ODBC) Note: requires de-normalized database
20030120	Ignore Micro$oft complaint C4200
20030321	Enlarged buffer for SqlErrorMessages (Database->Msg)
20030819	Allow longer filenames
20040528	Added ExtractRecords (dbase III only)
20040530	Added InternalQuery (for converting normal to indexed queries)
20040605	Made lockstart __int64
20040612	Made lockstart in again - now pure record#; added TotalRec, MBExtra
20041003	Statement length set to 310 kb (see dbsql.cpp for explanation)
20041013	Malloc SQLStatement instead
20050109	Adapted for linux compile
20050905	Postgres code by Piotr Filipczuk checked by mvh, will not affect other operations
20060219	Start on native mysql driver
20060220	Include all required mysql defines here
20060226	Runtime load MYSQL in WIN32
20060628	Use mysql.h proper (for datastructures) even when runtime loading (sorry for the hard include path)
20060701	Added mysql_fetch_lengths
20070206	Added CreateDatabase
20070218	Added SqLite
20070307	Made database type local, added Database(type) creator
20070705	Added DT_DBASEIIINOINDEX: disables indexing and packing; Extented max number of dbf files to 20
20071115	Static mysql use <mysql.h>
20071118	Adapted for 64 bits (use SQLLEN for BindField)
20080107	Removed double declaration of SQLLEN
20080821	Fix for SUNWspro compiler
20081116	Adapted for 64 bits linux (avoid use of "long")
20081117	Allow compile with both POSTGRES and USEMYSQL
20081119	added run-time loading of postgres for WIN32
20081120	Finished it
20081124	Added DT_NULL
20090114	Increased MAXFIELDS to 100 for clone_xvi
20091231	Changed char* to const char* for gcc4.2 warnings
20100111	Merged
20100619	Added no-copy to the Database class.

20100717 Merged
20110502 Added db:Exec
20140629 Added access to last error functions for mysql and pqsql
20230904 Updated for new postgres interface
20260614 Started on SqLite backup
20260620 Added blocks and delay parameters

AMAP.CPP (part of DGATE.EXE):

19990827: added (limited) wildcard mapping in GetACRNema: AE, port or IP may end on '*'
20001105: replaced m-alloc by new
20011109: Made AE mapping case insensitive
20020524: In function 'GetACRNema', first try case SENSITIVE then INSENSITIVE
20030701: Added compression column (with this code is this column is not optional!)
20030703: KNOWN BUG: number of columns may not be 3 (crashes)
20030709: Solved above problem; rewritten parsing of Acrnema.map
20030709: known bug: trailing spaces lead skip of next line
20030711: Fixed trailing spaces in acrnema.map
20031118: Fixed leak InitACRNemaAddressArray
20261005: Protect against too long passed AEs; limit reading of amap fields to 32-128-64-32

XVGIFWR.CPP (part of DGATE.EXE):

20050129 Adapted for use in the Conquest DICOM server (see //)
20050130 Made it ansi C
20050826 Made it reentrant to avoid gif file corruption in server
20051219 Fixed leak
20070902 Made cpp
20080905 Removed malloc.h for DARWIN
20090620 Include file stuff
20091231 Changed char* to const char* for gcc4.2 warnings
20100111 Merged
20100309 Commented out unused variables (gcc4.2 Warnings)
20100619 Added UNUSED_ARGUMENT.
20100717 Merged
20101004 Taken lsp's code of avs_animatedgif into use
20101116 Warnings fixed
20101120 Merged
20101128 Fixed double fclose

JPEG_ENCODER.CPP (inactive part of DGATE.EXE):

20090215 Started on update history
20090412 Added BGRto444(14): accepts RGB instead instead of BGR (!)
20100224 Fix warning redifine INT32 with HAVE_LIBJPEG
20100309 Fixed Operation on 'x' may be undefined warnings (gcc4.2)
20100703 Merged except typedef INT32
20100706 Accepted INT32 change
20100717 Merged
20170304 Commented INT32 define for linux

WINTYPES.HPP (part of DGATE.EXE, Linux only):

20050111	added SWORD and UWORD

NPIPE.CPP (inactive part of DGATE.EXE, Linux only):

20050111	Blocked out sys/conf.h; compiles with linux but gives linker warning: fattach not implemented and will always fail
20051217	Return (unsigned) 0xFFFFFFFF instead of signed –1
20070308	Change things for BSD and DARWIN.
20070316	Some more fixes
20091229	Completely disabled call to fattach, ioctl, and isastream as per http://www.image-systems.biz/forum/viewtopic.php?f=33&t=1666
20100111	Some layout
20100619	Fix gcc4 warnings.
20100717	Merged

NPIPE.HPP (part of DGATE.EXE, Linux only):

20070308	Added changes for BSD and DARWIN
20100619	Added no-copy to the NamedPipe class.
20100717	Merged

GPPS.CPP (part of DGATE.EXE):

20040111	Fixes: defaults now work, allow DOS type files, case insensitive
20070330	mvh Change by Mark Pearson: also allow tabs instead of spaces around =
20090620	Include file stuff
20091231	Changed char* to const char* and added blank[]="" for gcc4.2 warnings
20100111	Merged
20100124	Fix: blank item (e.g., password =) returned default not empty
20100124	Added cache for ini items: accelerates server with cached disk data 7x!!!!
20100124	ini file is tested for newer version every second
20100309	Added double parentheses (gcc4.2 Warnings)
20100703	Merged
20100619	Added no-copy to the NamedPipe class.
20100717	Merged
20110320	Removal of trailing blanks in value also removed one character after blank
20110331	Added FlushPrivateProfileStringCache
20110407	Extended FlushPrivateProfileStringCache to reset timestamp Fixed that was reading beyond current section
20191019	Attempt to fix buffer overrun when reading long entries

GPPS.HPP (part of DGATE.EXE):

20091231	Changed char* to const char* for gcc4.2 warnings
20100111	Merged

20100124	Renamed to MyGetPrivateProfileString used for windows and linux
20110331	Added FlushPrivateProfileStringCache

TOTAL.CPP (part of dgate.exe for most builds)

20020822	This file compiles to TOTAL.EXE = DGATE.EXE with, e.g., BC55
20050102	Added NOINTJPEG flag: jpeg8/12/16 sources cannot be compiled at once
20050107	Changed order of compile
20050111	Added npipe.cpp and gpps.cpp for LINUX
20050118	Documented how to compile under linux and with visual c++
20050121	Changed filename to lower case
20050130	Added xvgifwr.c
20070315	bcb added DARWIN stuff
20070330	bcb added DARWIN compile example
20080820	Solaris compile example
20080910	fixed DARWIN compile example for build version of mysql
20081016	Fix link to xvgifwr.cpp; 64 bit example code
20090209	Added jpeg_encoder.cpp
20090411	Added second SUN example
20100120	removed DARWIN (PPC, 10.4, now old) compile example. JPEG lib is internal, so undef NOINTJPEG if used.
20100123	Include stddef here for windows to avoid jasper.h compile problem
20100124	Also use gpps for windows.
20100224	Added defines for OpenJPEG
20100706	Allow both libaries at once
20100721	Merged
20100815	bcb added two defines; Merged
20140417	Change the order of include files.
20160219	Use Bruce Bartons new jpeg sources. Note: CHARLS requires Visual studio 2015 to compile
20160220	Allow build without jpeg support
20160229	use LIBOPENJPEG2 define; add __iob_func to allow mixed VS2008/2015 compile
20160306	Use OPJ_STATIC link all codecs statically
20181217	Added printsop.cxx
20190109	Make uncompconv unconditional; is used in converter to bitmap image
20200203	Added LUA51EXTERN option for dynamic loading of lua5.1.dll
20200314	Added JPEGIGNORELOSSLESSJFIFCOLORSPACE

KILLER.CPP (main of KILLER.EXE, which is not part of this release of the Conquest DICOM server):

19980619:	Added some doc on command line options and modes Fixed -L option (moved db.close)
19980620:	Made code suitable for external calling; copied some of it to device.cpp. Killer.exe is not needed anymore with NKI

Dgate.exe except as sleeper task because the alert task has been integrated into Dgate.exe
20030702: Adapted because of compression externals required by device.cpp
20030706: Attach VRType to PDU's for implicit little endian support
20050129: Adapted dummy for DumpVR
20071118: Adapted for 64 bits (use SQLLEN for BindField)

AAAC.CXX (part of DICOM core library):

19980327: Removed evaluation of Count without initialization in ReadDynamic
20001106: Use memcpy instead of ByteCopy
20030122: Fixed initialization of AAssociateAC
20050108: Fixed for linux compile
20080203: Added experimental ConfigPadAEWithZeros
20080313: Removed some warnings
20100619: Fix gcc4 warnings and improve speed
20100717: Merged
20111010: Fix reading of accepted presentation contexts: array was ot cleared and eventually overflowed
20140528: Kept member initialization only in constructors: not GNUC specific
20140910: Added hasTrn flag to fix issue in communication with Aria
20150908: Set count to 0 after skipping unknown element
20181113: replace min() by MIN() for Ubuntu 18 compile
20201224: Added error handling
20250214: Fixed copy-paste errors that didn't replace CalledApTitle with `CallingApTitle`

AAAC.HPP (part of DICOM core library):

20140910 added hasTrn flag for Aria issue

FARRAY.THH (part of DICOM core library):

20100309 Changed INT to unsigned UINT.(gcc4.2 Warnings)
20100621 Added no-copy to classes
20100707 Merged
Spectra-0017: Thu, 6 Mar 2014 15:37:26 -0300: Fix mismatched new/delete in farray.thh
20140813 Private copy ctor and member initialization not GNUC specific

AARQ.CXX (part of DICOM core library):

20001106: Use memcpy instead of ByteCopy
20001128: Removed two warnings
20030122: Fixed initialization of AassociateRQ
20060618: Added definition of min()
20080203: Added experimental ConfigPadAEWithZeros
20080313: Removed some warnings
20100619: Fix gcc4 warnings and improve speed.
20100717: Merged

20140528: Kept member initialization only in constructors: not GNUC specific
20150512: user info fix in count calculation (lsp)
20150729: Reverted change as it broke Mirada connectivity
20150730: Reapplied change and fixed UserInfoBaggage calculation for ignored sub-items
20150908: Added HasImpVersion to UserInformation; needed for VITREA which does not send it
Set count to 0 after skipping unknown element
20181113: replace min() by MIN() for Ubuntu 18 compile
20201224: Added error handling
20221108: Added SCPSCURoleSelect array in UserInfo
20230607: Fix ReadDynamic of SCPSCURoleSelect
20250214: Fixed copy-paste errors that didn't replace CalledApTitle with `CallingApTitle`
20260817: Fixed potential buffer overrun reading UIDs (dutchypoo (https://github.com/dutchypoo))

AARQ.HPP (part of DICOM core library):

20001106: Use memcpy instead of ByteCopy
20091231: Changed char* to const char* for gcc4.2 warnings
20100111: Merged
20100619: Fix gcc4 warnings, improve speed and added UNUSED_ARGUMENT.
20100717: Merged; Q1 OK
20100728: Added PresentationContext(const PresentationContext&)
20100815: Merged
20140528: Member initialization and assignment operator are not GNUC specific: latter is used in CqDicom project
20150908: Added HasImpVersion to UserInformation; needed for VITREA which does not send it
20221108: Added SCPSCURoleSelect array in UserInfo
20260817: Fixed potential buffer overrun reading UIDs (dutchypoo (https://github.com/dutchypoo))

AARJ.CXX (part of DICOM core library):

20100619: Fix gcc4 warnings and improve speed.
20100717: Merged
20140309: Default AAbort source to 0 (service-user initiated abort)
20131129: Fixed AAbort PDU with Source value set to 3. Now 0 or 2 (default).
20140528: Kept member initialization only in constructors: not GNUC specific
20160221: Imported bcb change 20131129
20201224: Added error handling

ARRAY.TCC (part of DICOM core library):

20050125 Added 'ReplaceAt()' to the 'Array' class
20100619 Fix gcc4 warnings and improve speed.
20130429 Corrected (unused) printf format string
20130812 Removed non-thread safe caching of last value

	Does not seem to affect speed, throughput remains at 320 MB/s receive with 3 senders and receivers in same dgate on 8-core machine
20131016	Merged
20190919	Replaced linked list by plain array for performance reasons
20190926	Fixed issue with RemoveAt() followed by Add()

ARRAY.THH (part of DICOM core library):

20050125	Added 'ReplaceAt()' to the 'Array' class
20100617	Fix gcc4 warnings, improve speed and added constructors.
20100717	Merged; QUES:6 ok; changed = operator; QUES:7 ?
20100816	Meged bcb cleanup
20130812	Removed non-thread safe caching of last value
20140310	Initialize "last" member in copy constructor to avoid access violation
20190919	Replaced linked list by plain array for performance reasons

CCTYPES.H (part of DICOM core library):

20001107:	Fixed to allow compile with BC
20010705:	Fixed to allow compile with MSVC 6 (see note below)
20040111	Fix for __GNUC__
20040117	Fix for linux
20070308	Added for DARWIN apple endian defs
20070902	Changed INT32 and UINT32 from long to int for ms7/ms8 compile
20100706	Made INT32 match libjpeg if HAVE_LIBJPEG.
20100717	Merged; fixed for WIN32 64 bits
20140611	Fix for INT32 under unix

ENDIAN.CPD (part of DICOM core library):

20001106:	removed unneeded (and sometimes uncompilable) XE_UINTX::XE_UINTX (int x)

ENDIAN.HPD (part of DICOM core library):

20001106:	removed unneeded (and sometimes uncompilable) XE_UINTX::XE_UINTX (int x)

ENDIAN.CXX (part of DICOM core library):

20070330	Merged bcb stuff
20070726	Removed some duplicates from endian.hpp
20130508	Removed unused XE_UINTX and include "endian.cpd"

ENDIAN.HPP (part of DICOM core library):

20090215	Started an update history

DICOM.HPP (part of DICOM core library):

20071102:	Define SetDicomErrorHandler etc

20080203: Added experimental ConfigPadAEWithZeros
20090211: Added DCM_ERROR_PARSE
20090802: Added DCM_ERROR_DEBUG
20091231: Changed char* to const char* for gcc4.2 warnings
20100111: Merged
20110231: DicomError returns FALSE when handler not installed - to allow some errors to pass
20110605: Added DCM_ERROR_ASSOCIATION

RTC.CXX (part of DICOM core library):

19980330 Added an RTC memberfunction for loading the dicom library from memory (e.g. a resource).
19980331 Added function for writing binary RTCs (function was originally implemeted in 'makebrtc.cxx'
19980414 Added RTC::GetGroupElement memberfunction, to retrieve the Group and Element numbers using a library-keyword.
20040930 Also return TypeCode in RTC.GetGroupElement()
20071128 Do not remove existing TypeCode if new one is unknown
20090620 Always include stdlib.h
20091028 pack(4) for __Binary_RTC_Header
20091029 More adjustments for 64-bits (reading/writing binary RTC)
20100309 Changed int to unsigned int, commented out unused variables (gcc4.2 Warnings)
20100717 Merged
20130503 Make sure that padding bytes are set to zero
20130508 Use delete [] StringTable rather than delete StringTable as indicated by Klocwork
20130619 Added fclose(fp) before return, added checks to AttachBinaryRTC(), again as indicated by Klocwork
Spectra-0016 Thu, 6 Mar 2014 15:36:06 -0300: Fix mismatched new/delete in rtc.cxx
20140528 Kept member initialization only in constructors and non GNUC specific code in GetGroupElement()

RTC.HPP (part of DICOM core library):

19980331 Added prototype for writing binary RTCs
20091029 Adjustments for 64-bits
20100619 Added no-copy to the RTC class.
20100717 Merged
20130429 Made no-copy generic (not only for __GNUC__)

TRNSYN.CXX (part of DICOM core library):

19980409: Fixed possible transition between presence and absence of TypeCodes in 'Dynamic_ParseRawVRIntoDCM'
19990904: Treat type UN same as OB,OW and SQ when reading Explicit files.
20001106: Replaced == operator by strcmp
20010905: Several fixes: UCDMC should NOW be able to read ExplicitBigEndian files
20011220: Fixes in Sequence and Item delimiters
20030122 Fixed small leak in Dynamic_ParseRawVRIntoDCM

20030205	Support new datatype 'UT' (unlimited text). Thanx to William Peterson
20030424	Changedprototype of ParseDCMIntoRawVR. Fixed huge bug in sending of ExplicitLittleEndian sequences
20030627	Fix for MSC 4.2
20030725	Keep GroupLength for group 0x00 (Radworks 6.0 was choking in this)
20040406	Make TypeCode 'UN' if not known, and conversion to Explicit is wanted
20050112	Fixed huge bug in Explicit_ParseDCMIntoRawVR, causing data-loss. Thanx to Goran Peros.
20051217	Use new VR::ReAlloc method to replace data in VR
20051218	Use memcpy to enter UID (extra 0 will be available: end of string)
20051219	Use ReAlloc instead of new BYTE[] to fill VR data
20051229	Moved Push in ParseRawVRIntoDCM so that not done when VR exists
20070308	Added big endian stuff
20071031	Removed some commented out code
20071108	In Dynamic_ParseDCMIntoRawVR(), let group 0x08 behave the same as all other groups greater than 0x02.
20071118	NOTE: previous change is not in release 1.4.13
20071128	Add TypeCodes if needed using AttachedRTC->RunTimeClass
20080913	Fix in bigendian input: interpret group 0 as littleendian
20090211	Added many checks on corrupt dicom data during parsing; removed blocked out code
20090212	Fixed a problem in the check code if some (but not all) group lenghts are missing
20090215	Improved formatting of lenght error message
20090620	Added <stdlib.h>
20090824	Resume parsing after invalid element length if length was not too big
20100102	Merged bcb changes for bigendian
20100111	bcb moved setting 0002,0010 to work for all transfers in ParseRawVRIntoDCM: fix for osiris; Added JASPER stuff; const
20100118	Always allow jp2k
20100119	Put HAVE_LIBJASPER back in (unfortunately that creates a dependency between dicomlib and dgate)
20100119	Changed Dynamic_ParseRawVRIntoDCM and ParseImagePixelDataRawToDCM to read NovaRad files and remove the errors.
20100121	Merged but put into NOVARAD_FIX define; not bcb alsp prints which parser reports errors
20100125	Linux warnings.
20100224	Changed HAVE_LIBJASPER to HAVE_J2K for OpenJPEG and fixed more warnings (-Wall)
20100309	Added double parentheses (gcc4.2 Warnings)
20100309	Changed int to UINT, commented out unused variables (gcc4.2 Warnings)
20100419	Fixed Dynamic_ParseRawVRIntoDCM big endian
20100619	Made VRBuffer local lVRBuffer.
20100707	Merged

20100718	Looked at and rejected the date change: you can use importconverters for this job
20100722	iorgmode change breaks the reader for me!
20100724	Put back date change with DATE_FIX inclosing it.
20101001	Allow CurrentGroupLength==0 as warning
20101018	Fixed big endian in Dynamic_ParseRawVRIntoDCM.
20101020	Merged.
20101116	Added to/from big endian and used it to fixed big endian recieve.
20101120	Merged
20110231	allow some parsing errors when DicomError handler not installed
20105001	This is the rolled back dicom decoder to 1.4.16beta4 version; with dummy FALSE passed to Implicit_ParseRawVRIntoDCM
20105001	It fixes a small leak that fragments memory
20110502	merged IgnoreDicomError change (20110231)
20111020	Enabled NOVARAD_ODD_FIX for rubo demo images; added warning
20120723	bcb fixed datefix (extra ; after if)
20130514	Fixed Big Endian parse, fixed warnings with strnlen32u()
20130523	Merged Big Endian parse fix not strnlen32u()
20130619	Fixed problem in GetTransferSyntaxUID() indicated by Klocwork
20130711	Merged
20131207	Fixed Jpeg_LS
20140125	Set TypeCode to SQ if SQObjectArray defined and TypeCode was UN
20140319	Allow MPEG encoding
20140608	Blocked MPEG for now
20140611	I16 macro to replace multicharacter literals
20140617	Reverted I16(): considered a major change by mvh
20141111	Added type 'OF' with 32 bits length
20141230	Add proper byte swapping to read and write bigendian; set transfer syntax to littleendian after read bigendian and swap
20150629	If encoding short dicom tag with length > 64k make it 'UN'
20151207	put DATE_FIX where it belonges.
20160221	Imported bcb changes 20131207 20151207
20160229	Removed #ifdefs for CharLS and J2k
20170827	Do not insert TransferSyntax into sequences, use UI instead of IU
20181124	Back to IU is in preamble
20201223	check length of VR < lVRBuffer.GetIncomingSize() to avoid crash on corrupted files
20210110	Lenght error conditional, returns possibly truncated object if NoDicomCheck=1
20210113	Added new types UR, UC, OD and OV with 32 bits VR length; added swapping of OD and OV
20210118	WIP: Added code to read implicitly coded sequences in explicit content
20210118	Every length exceeding warning phrased differently for easy of finding
20240103	Added information about previous tag when parsing goes wrong
20240326	Added type 'OL' with 32 bits length

20250214	Made mis-encoded pixel data a warning
20260906	Use VR->GetString

DEIVR.CXX (part of DICOM core library):

19990318	Added 'DICOMObject::DeleteVR'
20001106	Used delete [] operator for vr->Data
20010426	Fixed small leaks in 'DICOMObject::DeleteVR'
20010730	Added 'DICOMObject::ReplaceVR'
20010802	Added 'VR::GetSpecialValueCodeOfVR'
20011121	Added VR_SPECIAL_RGB_TO_MONO. Used by a conversion-tool to change ultrasound Kretz RGB images to monochrome that VariSeed (brachytherapy) understands.
20011121	Added VR_SPECIAL_RGB_TO_MONO_PLUS. Same as above, but tries to preserve colored drawings.
20051217	Added 'VR::ReAlloc'
20051217	Use malloc/free instead of new char[] and delete []
20051229	Removed unnecessary reset() in DeleteVR
20071031	Temp printf memory error messages
20071102	Send allocation errors to DicomError
20080313	Removed some warnings
20080910	Added VR::VR(UINT16 g, UINT16 e, UINT32 l, LE_UINT16*d) &VR::VR(UINT16 g, UINT16 e, UINT32 l, LE_UINT16 *d, BOOL mFlag) for big endian.
20081016	Fix for WC: new of 0 gives NULL (check Length in error message)
20090620	Added <stdlib.h>
20091230	Merged bcb bigendian change
20100110	And const change
20100309	Added double parentheses (gcc4.2 Warnings)
20100619	Fix gcc4 warnings and improve speed and added questions.
20100717	Merged except keep default ReleaseMemory to TRUE and check data when adjusitn length
20100728	Removed unused AutoMakeDO, added Get's to VR and DICOMObject. Added ChangeVR's. Fixed LastVR & LastVRG?
20100815	Merged; fix VR constructors for failed malloc; added max parameter to GetCstring function; Moved defaults from implementation to header files
20100826	bcb noved another default, size_t
20100901	bcb changed alloc of US to 2
20110231	DicomError returns FALSE when handler not installed - to allow some errors to pass
20140512	Updated the implementation of VR* DICOMObject::GetVR()
20140528	Kept member initialization only in constructors: not GNUC specific
20200203	lsp removed DataPointer stuff to support lsp array change
20260905	VR.GetString(buf, max), fills buf returns FALSE if truncated at max-1
20261012	Fixed one character buffer overun in GetString (SM1312, Mahesh)

DEIVR.HPP (part of DICOM core library):

19990318	Added 'DICOMObject::DeleteVR'
20010730	Added 'DICOMObject::ReplaceVR'
20010802	Added 'VR::GetSpecialValueCodeOfVR'
20051217	Added 'VR::ReAlloc'
20080910	Added VR::VR(UINT16 g, UINT16 e, UINT32 l, LE_UINT16 *d) & VR::VR(UINT16 g, UINT16 e, UINT32 l, LE_UINT16 *d, BOOL mFlag) for big endian.
20100619	Fix gcc4 warnings and improve speed, and prevented coping of clases with pointers.
20100717	Merged
20100728	Removed unused AutoMakeDO, added Get's to VR and DICOMObject. Added ChangeVR's.
20100815	Merged; added max to GetCstring; Moved defaults from implementation to header files
20100823	bcb moved default parameter here
20140528	Member initialization and private copy constructors are not GNUC specific
20260905	VR.GetString(buf, max), fills buf returns FALSE if truncated at max-1

SOCKET.CXX (part of DICOM core library):

20010426	Added 'setsockopt' in 'Listen' and 'Open' Call 'shutdown' before closing a socket
20010720	Changed 'print' to 'fprint(stderr,...)'
20050116	Adapted for LINUX compile
20050119	Blocked out SOCKET END ERROR message
20070406	Use reentrant gethostbyname_r when available
20070415	Small fix there for windows
20090620	Added unistd.h for UNIX
20090824	Debug output of adress connecting to socket
20091231	Changed char* to const char* for gcc4.2 warnings
20100111	Merged
20100122	Gethostbyname: fixed bug reported by Arash 2station would not be found
20100122	Added Poll() method: returns TRUE if data available
20100125	Linux warning
20100309	Commented out or inited to fix unused variable warning (gcc4.2 Warnings)
20100619	Fix gcc4 warnings, improve speed and made TimeOut local.
20100707	Merged
20121214	Set l_onoff to 0 (3x) to fix connection with some dicom systems
20130429	Removed unused FarProc
20140528	Kept member initialization only in constructors: not GNUC specific
20200617	Replaced UNIX version of SendBinary with luasocket inspired waiting code
20200618	Made send() timeout ~20s by increasingly longer nanosleep
20220922	Host names like 2.aap.mies are looked up; 1.2.3 taken as is
20250701	Added error messages and connection retries
20250702	Fixed connection retry for Linux; fix small mistake
20260912	Corrected dates in update

SOCKET.HPP (part of DICOM core library):

20091231	Changed char* to const char* for gcc4.2 warnings
20100111	Merged
20100122	Added Poll function
20100619	Added no-copy to the Socket class.
20100707	Merged
20121214	Mode sa public
20140528	Private copy constructor is not GNUC specific

SAFEMEM.CXX (inactive part of DICOM core library):

20010720	Changed 'printf' to 'fprintf(stderr,...)'

DIMSEN.CXX (part of DICOM core library):

19990415	Removed static on TranslateUIDToVR
20020822	Use instead of DIMSEN.CPP
20071118	Removed faulty overloaded 'NGetRQ::Write'
20080905	Removed (void*) cast for deivr change
20100309	Added double parentheses (gcc4.2 Warnings)
20100619	Added UNUSED(x)
20100717	Merged

DIMSEN.HPP (part of DICOM core library)

20020822	Cleanup layout
20100619	Added virtual destructors
20100717	Merged
20140528	Virtual destructors are not GNUC specific

DIMSEC.CXX (part of DICOM core library):

20030219	Removed MessageID and Priority from the 'write' functions of CStoreRSP, CFindRSP and CMoveRSP
20030606	Added parameter 'QueryRetrieveLevel' to CFindRSP::Write
20030811	Do not send DDO in CMoveRSP::Write (DicomEye and OFFIS do not like that).
20050129	Added Write with extra vr to CEchoRSP
20051222	Do not add query level if already exists
20070308	Made changes for big endian
20070314	Allow send of 0000,1030 (MoveOriginatorAE) and 0000,1031 (MoveOriginatorMessageID) in CStoreRQ
20070330	Merged bcb's Darwin and Endian stuff
20080203	Added experimental ConfigPadAEWithZeros
20080910	Removed big endian changes from here and moved to deivr
20100309	Added double parentheses (gcc4.2 Warnings)
20100619	Added UNUSED_ARGUMENT.
20100717	Merged
20120624	Delete transfer syntax in data object of outgoing images
20120628	Undo above change that only affects 'as': would probably break 'as' transfer of jpeg
20140608	Added BYTE PCid to CStoreRSP::Write

20140611 This change is under review: pcid does not seem to get the right value
20180315 Started on C-GET
20220805 Pass through 0x9999,0x0404 from DCO to DCOR in CECHORSP (set when payload odd length)

DIMSEC.HPP (part of DICOM core library):

20030606 Added parameter 'QueryRetrieveLevel' to CFindRSP::Write
20050129 Added Write with extra vr to CEchoRSP
20070314 Allow send of 0000,1030 (MoveOriginatorAE) and 0000,1031 (MoveOriginatorMessageID) in CStoreRQ
20100619 Added virtual destructors (gcc4.0 Warnings)
20100717 Merged
20140528 Virtual destructors are not GNUC specific
20140607 Added BYTE PCid to CStoreRSP::Write
20140610 Merged
20180315 Started on C-GET

UNIQ.CXX (part of DICOM core library)

19990511 Fix: All routines wrongly used '%' instead of '&'

MAKEBRTC.CXX (part of DICOM core library)

19990415 Note: requires changelog

PDATA.CXX (part of DICOM core library):

20100619 Fix gcc4 warnings, improve speed and made locals.
20100717 Merged (note: locals means changes parameter names)
20130807 Detect invalid Length returned to fix hanging thread issue
Fixed >0 check on UINT32
20140528 Kept member initialization only in constructors: not GNUC specific
20160827 Added DARWIN change by bcb as described here:
The speed problem in OSX dropped the files transfer from 110 seconds to 1 second on my Apple. I found this when trying to send the file that crashed jpeg 2000 and jpegls that you sent me. Just a one nanosecond delay fixed a race. By the way, this test was done in non threaded mode. So it is a race in the operating system.
20180316 Implemented buffer size change proposed by lsp
20181123 Changed that to 16k, restored compatibility with carestream viewer
20190109 Made MaxSubLen configurable from outside
20190117 Default MaxSubLen to 4096 for if not set
20190126 Reduced blocksize by 6; now DCMGETSCU etc work

PDATA.HPP (part of DICOM core library):

20100619 Added no-copy to the classes and init list to LinkedBuffer.
20100717 Merged

20140528 Private copy constructors and member initialization are not GNUC specific
20140528 Kept member initialization only in constructors: not GNUC specific
20190109 Made MaxSubLen configurable from outside

PDU.CXX (part of DICOM core library):

19980322 Blocked one remaining printf statement "comparing ..."
19990202 Added PDU memberfunction 'IsAbstractSyntaxAccepted'
19990415 Merged both versions
20000322 Fix in search for PresentationContext when identical AbstractSyntaxes occur (e.g. GECT-scanner). Do not break out of the inner loop in PDU_Service::InterogateAAssociateAC.
20000322 Fix of PresentationContextID in PDV: in routines PDU_Service::Write(DICOMObject*, UID*), set PresentationContextID to TempByte, not to TempByte1.
20000911 Removed two warnings
20020316 Added GetLocalAddress and GetRemoteAddress
20030306 Fix: Huge bug in 'InterogateAAssociateRQ'
20030424 Blocked out obsolete PDU.Write(&DDO)
Some work on offering other TransferSyntaxes than ImplicitLittleEndian when running in SCU mode
(Note: when running in SCP mode, 'dgatesop.lst' is used)
Fix: CommandObjects are always ImplicitLittleEndian
20030627 Fix for MSC4.2; re-enabled obsolete write calls for test.cxx
20030710 Adjusted test.cxx, and disabled obsolete calls again
20080816 ValidPresContexts is now a global: how many incoming connection can handle
20090802 Added DCM_ERROR_DEBUG statements to debug failed connect
20100303 Commented out unused variables (gcc4.2 Warnings)
20100619 Fix gcc4 warnings, improve speed.
20100717 Merged
20100726 bcb documented the mess in function AddAbstractSyntaxAlias
20100728 May have fixed AddAbstractSyntaxAlias, but I have no way to test.
20100815 Merged
20100914 Cleaned up AddAbstractSyntaxAlias problems (double release)
20100918 Merged
20110604 Count and show #candidates for "No valid presentation contexts found"
20110605 Added more DCM_ERROR_ASSOCIATION info that will show as proper server errors
20130619 Return NULL from DetachRTC() rather than pointer to deleted object20120820 Fixed a case where k-pacs sent a leading empty Transfer Syntax Name.
20130807 Testing result of all :: Read operations fixes hanging thread problem if you ctrl-c a c-store script
20131016 Merged
20131106 Removed return FALSE on Failed read in Multiplex(int Socketfd) fixes multiplex connection terminated on some clients.

20140528 Kept member initialization only in constructors: not GNUC specific
20140607 Added PDU_Service::Write(DICOMCommandObject *DCMObject, UID &uid, BYTE PCid)
20140610 Merged
20140611 Fixed accidentally blocked if() statement
20141009 Added many debug messages to identify sources of failure
20160221 Clear ItemType to avoid endloss loop after connection lost
20160827 Released with 32768 PDU max size
20190109 Pass incoming MaxSubLength to PDataTF (print for now)
20190118 Take out print statement
20190318 Deal with zero returned MaxSubLength; use 8192 pdusize for Linux
20190319 Image corruption only stops at 4096 pdusize for Linux
20230608 Copy AAssociateRQ SCPSCURoles to AassociateAC
20261008 Log AE title if rejected
20261019 Connect keeps SCPSCURoles proposed by caller (for storage commitment event)
20261019 Merged mmd StorageCommitment change; although this code is also in InterogateAAssociateRQ
20261104 Pass IP address into multiplex; fix by Marcin Makalowski DivNet/MakeIT divinus

PDU.HPP (part of DICOM core library):

19990202 Added PDU memberfunction 'IsAbstractSyntaxAccepted'
20020316 Added GetLocalAddress and GetRemoteAddress
20030424 Changed prototype of ParseDCMIntoRawVR
20030627 Fix for MSC4.2
20030905 Removed spurious ;
20080816 ValidPresContexts is now public: how many incoming connection can handle
20080819 CanYouHandleTransferSyntax is now public; use BOOL not bool
20091231 Changed char* to const char* for gcc4.2 warnings
20100111 Merged
20100619 Fix gcc4 warnings and improve speed,
and prevented copying of the PDU_Service class with pointers.
20100723 Merged
20101120 bcb added parameter
20110320 Rollback of dicom decoder (parameter) to 1.4.16beta4 version
20110326 Put it back again
20130619 Made no-copy generic (not only for __GNUC__)
20140528 Private copy constructor and member initialization are not GNUC specific
20140607 Added PDU_Service::Write(DICOMCommandObject *DCMObject, UID &uid, BYTE PCid)
20140610 Merged
20160827 PDU size configurable

FILEPDU.CXX (part of DICOM core library):

20000420 Fix in MakeChapter10: type of AffectedSOPClassUID and RequestedSOPClassUID

20030205 Fixed FileMetaInformationVersion for big-endian machines
20030424 Put the correct TransferSyntaxUID in chapter10 files
20041108 Fix strdup memory access problem (found using $c drop file test mode)
20051229 Fixed LEAK of 68 bytes when 0002,0010 not defined
20060618 Added definition of _SH_DENYNO
20090211 Check result of Dynamic_ParseRawVRIntoDCM
20091231 Changed char* to const char* for gcc4.2 warnings
20100111 Merged
20100309 Added double parentheses (gcc4.2 Warnings)
20100309 Cast multichar as UINT16, commented out unused variables (gcc4.2 Warnings)
20100706 Fixed TransferSyntax in SaveDICOMDataObject(ACRNEMA_VR_DUMP) for testcompress.
20100726 Merged
20100823 Merged small comment fix
20130508 Fixed problem in SaveDicomDataObject() indicated by Klocwork
20220824 Added LoadDICOMDataObjectTrunc (WIP)
20260710 SaveDICOMDataObject accepts @filename: append to file
20260716 Merged fix by Divinus; wrote to constant string
20260906 Use VR->GetString

BUFFER.CXX (part of DICOM core library):

20001106: Use memcpy instead of ByteCopy
20071031: Temp printf allocation errors
20071102: Send allocation errors to DicomError
20081016: Default buffer size from 1024 to 10240
20100619: Fix gcc4 warnings and improve speed.
20100717: Merged
20130416: Set DEFAULT_BREAK_SIZE for UNIX to 8192 to fix not understood ubuntu12.04 problem with zeros tranmitted after 1st 64k
Spectra-0009: Wed, 5 Feb 2014 10:57:52 +0000: Fix cppcheck bug #1
Spectra-0019: Thu, 6 Mar 2014 17:02:42 -0300: Fix mismatched new/delete in buffer.cxx
20140528 Kept member initialization only in constructors: not GNUC specific
20160221 Clear data if buffer read fails; avoids infinite loop if connection is broken
20180316 Implemented buffer size changes proposed by lsp
20190318 DEFAULT_BREAK_SIZE back to 8192 for linux

BUFFER.THH (part of DICOM core library):

20100309 Changed BufferSize, InSize and OutSize from INT to UINT
20100621 Added no-copy to the BufferSpace classes.
20100707 Merged
20140528 ensure INT32 define
20140610 Sorry this breaks dicom server compile nkiqrsop.cpp; e:\quirt\comps\exe\dgate\jpeg-6c\jmorecfg.h(202) : error C2632: 'int' followed by 'int' is illegal

VERSION.H (part of DICOM core library):

200107017	Changed ImplementationClassUID to a valid UID: the Agfa dicom validation tool protested against the original 'UID'. Changed ImplementationVersion from "0.1B/WIN32" to "1.01/WIN32"
20020416	Changed IMPLEMENTATION_VERSION_STRING to 1.3.11/WIN32
20021018	Changed IMPLEMENTATION_VERSION_STRING to 1.4.0/WIN32
20020208	changed IMPLEMENTATION_VERSION_STRING to 1.4.1/WIN32
20030424	changed IMPLEMENTATION_VERSION_STRING to 2.0.1/WIN32
20030709	changed IMPLEMENTATION_VERSION_STRING to 1.4.2/WIN32
20030815	changed IMPLEMENTATION_VERSION_STRING to 1.4.3/WIN32
20030402	changed IMPLEMENTATION_VERSION_STRING to 1.4.4/WIN32
20040530	changed IMPLEMENTATION_VERSION_STRING to 1.4.5/WIN32
20040713	changed IMPLEMENTATION_VERSION_STRING to 1.4.6/WIN32
20041101	changed IMPLEMENTATION_VERSION_STRING to 1.4.7/WIN32
20050901	changed IMPLEMENTATION_VERSION_STRING to 1.4.9/WIN32
20060103	changed IMPLEMENTATION_VERSION_STRING to 1.4.10/WIN32
20060311	changed IMPLEMENTATION_VERSION_STRING to 1.4.11/WIN32
20060708	changed IMPLEMENTATION_VERSION_STRING to 1.4.12/WIN32
20070307	changed IMPLEMENTATION_VERSION_STRING to 1.4.13/WIN32
20080831	changed IMPLEMENTATION_VERSION_STRING to 1.4.14/WIN32
20100713	changed IMPLEMENTATION_VERSION_STRING to 1.4.16/WIN32; added osx
20160221	changed IMPLEMENTATION_VERSION_STRING to 1.4.19/WIN32
20200311	changed IMPLEMENTATION_VERSION_STRING to 1.5.0/WIN32

FLPDU.CXX (part of DICOM core library):

20050130	Allocate 1 item longer lists to allow configuration from GUI
20050213	Fix to allow windows created file as input under linux
20060618	Added definition of _SH_DENYNO
20090802	Added DCM_ERROR_DEBUG statement to debug failed connect
20100309	Commented out unused variable (gcc4.2 Warnings)

20100619 Fix gcc4 warnings and improve speed
20100717 Merged
20110118 Added unchecked CheckedPDU_Service () using NULL default
Spectra 0014 - Wed, 12 Feb 2014 15:48:27 -0200: Patch mismatches new/delete in flpdu.cxx
20140528 Kept member initialization only in constructor and removed InitializeFrom(): not GNUC specific
20261005 Call virtual ShouldIAcceptLocalMapped, ShouldIAcceptRemoteMapped
20261010 Pass IP address to these; call with cleaned AE

FLPDU.HPP (part of DICOM core library):

20050129 Made tables public for config
20080819 Made CanYouHandleTransferSyntax public
20100619 Added no-copy to the CheckedPDU_Service class.
20100713 Merged
20110118 Added unchecked CheckedPDU_Service () using NULL default
20140528 Private copy constructor of CheckedPDU_Service not GNUC specific
20261005 Added virtual ShouldIAcceptLocalMapped, ShouldIAcceptRemoteMapped
20261010 These pass the connected IP address for further checks

VERIFY.CXX (part of DICOM core library):

20050129 Added ReadRequest and WriteResponse, allows extra response vr

VERIFY.HPP (part of DICOM core library):

20050129 Added ReadRequest and WriteResponse

QRSOP.CXX (part of DICOM core library):

20020429 Fixed reporting of number of complete slices (now starts with 1); return cancel status if C_STORE failed
20030606 Added parameter 'QueryRetrieveLevel' to CFindRSP::Write
20050401 Added ModalityWorkListQuery
20051222 Added pADDO to Query::Write method - answer appended to pADDO if set
20080820 Solaris fix (do not use variable name SS)
20090205 Added QueryMoveScript callbacks
20100122 Added support for C-CANCEL: poll the socket for any data and cancel if so
20100309 Added double parentheses (gcc4.2 Warnings)
20100619 Made Port local (lPort).
20100707 Merged
20100816 Added QueryResultScript
20140414 Added std::vector to store database query results because indexing in linked-list takes too much time.
20140527 Replaced std::vector by straight malloc to fix compile issue on some systems
20151115 Added <malloc.h>

20160827 respond to destroy in QueryResultScript
20160830 fixed that, reversed the test
20170904 Limit reported image count to 65535 in move response
20171018 Fix linux compile, can't use min()
20200203 lsp removed DataPointer stuff to support lsp array change

QRSOP.HPP (part of DICOM core library):

20030606 Added member-variable 'QueryRetrieveLevel' to StandardQuery
20050401 Added ModalityWorkListQuery
20051222 Added pADDO to Query::Write method - answer appended to pADDO if set
20090205 Added QueryMoveScript
20100816 Added QueryResultScript

STORAGE.CXX (part of DICOM core library):

20020429 check status of C-STORE RSP and return FALSE if failed
20030922 Added PDU_Service to CheckObject call
20070307 Added more debug error messages to retrieve
20070314 Allow send of 0000,1030 (MoveOriginatorAE) and 0000,1031 (MoveOriginatorMessageID) in StandardStorage : Write
20070315 Blocked out printf statements
20100309 Commented out unused variable (gcc4.2 Warnings)
20100619 Added #ifndefs (gcc4.0 Warnings) and UNUSED_ARGUMENT
20100717 Merged
20140607 Make sure CStoreRSP::Write uses same Presentation context as CstoreRQ
20200121 Added DCO to CheckObject
20210425 Allow own DCOR to be passed on StandardStorage::Write

STORAGE.HPP (part of DICOM core library):

20030922 Added PDU_Service to CheckObject call
20050108 Fixed for linux compile
20070314 Allow send of 0000,1030 (MoveOriginatorAE) and 0000,1031 (MoveOriginatorMessageID) in StandardStorage : write
20200121 Added DCO to CheckObject
20210425 Allow own DCOR to be passed on StandardStorage::Write

PRINTSOP.CXX (part of DICOM core library):

20020814 Added some comments and block-out mvh's debug code
20020816 Fix in 'AbstractPrintManagementMeta::Write'
20130429 Removed unused variables
20130411 Fix error C4355 (also a leak).
20140520 Unix compatibility
20160221 Imported change 20130411

SERVERTASK.CXX (links Delphi GUI and dgate.exe)
20181215; based on code by ljz and lsp
20200110; Allow change of transfer syntax

20220809; Added executable version servertask lua_chunk
20221013; Allow '<file' mode to return response
20221014; Suppress dicom error messages for luastart
20221016; Padd VR identifying odd length if needed for file upload
20230607; Fix that any --d command did dolua:
20230619; Fix in above fix

SQLITE3.C

20120611 version 3.7.13
20140527 version 3.8.5
20160318 version 3.11.1
20230516 version 3.42

CQJPEG8.CPP (inactive part of dgate.exe):
CQJPEG12.CPP
CQJPEG16.CPP

20020301 Created
20030415 Better exception handling
20030417 Support for multi-frame images
20041221 Changed include files
20050215 Fixed for fragmented frames in a sequence
20050901 Renamed errorcodes.h to errcodes.h
20070112 Return Width, Height and BitDepth of the image
20071001 Output of JPEG error messages to OperatorConsole in server
20080819 Suppress large amounts of jpeg errors; added \n
20081116 Adapt for very large objects (use unsigned int lenght)

DICOMP.CXX (sample print program)

20020816 Fix in (unfinished) main server code
20020822 Made this sample program part of code base
20080113 Fixed for MS7 compiler
20100120 Fixed for MS8 compiler

TEST.CXX (sample client program)

19980322: played around; added comments in query client
19980322: Added command line interface for c-find
19980323: Added command line interface for c-move
20000318: Added optional NKI command vr's to echoclient
20020315: Started on -fe: forwarding server; implemented echo, working on move and find
20020316: Added cstoreclient -t; load dd.txt as dicom dictionary; -fd=diagnostic mode (logs) Added IARQ; note: cast of PDU to dump() seems to crash sometimes. Forwarder works between QUIRT/conquest apps and conquest dicom server.
20020317: Made forwarder more general; works between EFilm and Conquest
20020811: Fixed forwarder such that it works for dicom-print
Fix: Forwarder did not worked with OFFIS because OFFIS checks message command/data pdv bit 6[1] that is was not set correctly by forwarder (command/data object)

20020822: Made this sample program part of code base
20030630: Fixed crash in cast of Dump(PDU) (c.f. 20020316)
Fixed passing of cmds to Find and Move
Fixed continuous CechoServer
Removed calls to obsolete PDU.Write()
20030721: Fixed SetStringVR (pad uneven strings with a space)
C-Find and C-Move wildcards "*" seem not to be valid
20040711: Fixed forwarder: status=0xff00 loops responses; status==0 keeps association open
20040712: Added auto-returner to forwarder - functions with NKI viewers (assumes viewerAE of X%ip or XX%ip).
You need to set AE and port of return forwarder in your PACS though; see gatewayname, gatewayport, returndump and viewerport for configuration
20040713: Attempt to make it multithreaded; however return connection only starts once (supports single client only!)
20040713: Split into modes -fp: for printer; -fb: forwards and returns; -fe normal forward; -ff fixing forwards
20051217: Use new ReAlloc method to replace data in VR
20060618: Allow (and disabled) looping of c-move to test repeated c-move problem in read-ahead thread
20061127: Allow (and disabled) looping alternating c-move and c-find to test server
20070902: Fixed for ms7 and ms8
20090411: mode -fp adds more transfer syntaxes uid2..uid8 (experimental)
20260906: Use VR->GetString; note: this file is not part of the dicomserver

DGATESERV.DPR (part of dgateserv.exe)

20000316 Created
20000326 Close handle on terminate
Dgate runs via new SlaveProcess mechanism of Uservice
20101113 Fix for vista - stop does not reach service

USERVICE.PAS (part of dgateserv.exe)

19990316 Fixed English of some messages
Added account and password as optional parameters for install
19990325 Added option to start/stop/install/uninstall on remote machine
Works fine with start / stop / uninstall
Remote install works except for wrong exe path
Therefore added ExeName property and command line switch
19990326 Added service option: makes it a generic installer!
Made ServiceName and ServiceDisplayName read/write
Added AllowSlaveProcess: command line can set slave process
Added SlaveProcess and SlaveProcessArgs: executable to start
Fixed arguments passing when /start is followed by more /
Fixed ServiceName: is read as first arg in DoCmdLineStart
Note: SlaveProcess is killed when service stops
20100827 WaitforStop also tests the SlaveProcess: service stops when slave crashes; Version in help text: now V1.1
20100901 Avoid RaiseLastWin32Error for common errors: it now shows a crash window

20101111	Avoid RaiseLastWin32Error for failure to start, use ShowMessage
20101113	Fix for vista - stop does not reach service
20101116	Stop before uninstall fixes uninstall for vista
20200311	Reverted to delphi5 version - note original author unknown

SERVERDRIVER.PAS (part of conquestdicomserver.exe)

19980405	Created
19980407	Added dgatesop.lst file creation; max AE to 16 chars
19980407	Sorted image list on SOPINSTANC to get correct order
19980412	Added DuplicateHandle code; but still deadlocks
19980413	Threaded mode avoids TCP/IP component (seems to fix deadlock)
19980414	Restart after switching server mode does not always work; Fix application to threaded mode for now. Added compression configuration.
19980415	Some fixes for the first installation code
19980505	Made length of directory field in MAGDEVIC 250 chars
19980608	Replaced TQuirtViewer with TImage => no need to load ntpars.dll
19980614	Merged code with use FPiette tcp components
19980616	All OK with new fpiette code; actually I had to fix my own bug
19980617	Save as bitmap and dump header in popup menu
19980618	Query and Move options for CQDICOM.DLL
19980619	Added header lister; default MagDeviceThreshHold to 10 MB
19980620	MagDeviceThreshHold is now configurable
19980621	Renamed table to MagDevice; use full table names Nicely coded DBF/Access choice; but fixed to DBF Delete patient and refresh database menu options
19980622	Double click query memo to make new query Show on bitmap: patient is being deleted/file not found
19980623	Save bookmarks of tables; move to next record after delete
19980624	DICOM.SQL: StudyNumber (StudyID in DICOM) is now 64 long (Microsoft SQL server does not allow truncation) Update bitmap after loading for fast display Text strings in UDP input to 1024 (for long SQL errors) Default password and user name to 'conquest' PAGETIMEOUT to 600 for better database performance Made DataSource name more or less configurable Made all port numbers more or less configurable Installing a second server on one PC while one server is running works
19980702	Added KBUSED field in MAGDEVICE table
19980703	Some changes in static texts and hints
19980704	Found a handle leak in RunDgate; not fixed yet
19980708	Make anonymous; show progress for move
19980710	Added experimental archive option; fix stopcopying option
19980711	Fix double click query on empty form; use tray icon
19980713	Add Name of server in tooltip of tray icon; fix DiskFree
19980717	Fix crash if directory does not exist
19980721	Clicking tray icon restores window
19981219	Improved error handling display;
19981220	List header of undisplayable object in static

	Read and save FileNameSyntax; default=3
19981221	Supress display of large files (>1 MB)
19981222	Use FieldByName, added combobox selectors
	Disable study navigator if only 1 available
	Moved modality from the study to the series level
19981229	Changed order of TableN.close to avoid side effects
19990104	Fixed MAGDEVICE creation under SQL server
	(KBused optional)
19990109	Made ImageNumber 10 bytes wide (for GE AdvantageWin)
19990110	Combobox1 is now patient filter and or selector
	Added access to cache and jukebox in browser but
	with limited support: up to 10 devices (one character)
	Added archiving page; fixed most handle leaks
19990112	Finished first archiving page; -hide command line option
	Added clear database and regen single device buttons
	Clear combobox for each page select
	NOTES: Archive page is configured by editing
	Restore original configuration or restart to load it
	Archiving allows up to 10 Jukeboxes, but only the
	selected one is used for writing. Only the drive
	with MAG0 is checked for disk space for automatic
	archiving. Only device CACHE0 is passed correctly
	to the burn program. This means: stick to 1 MAG
	device and 1 CACHE device for now.
19990113	Speeded archiving by selecting MAG0 if there is only 1
	Renamed entry to BurnThresholdMB, made BurnProgramList
	Note: to do - keep log file of archiving operations.
	- add RT objects to default sop file.
19990114	Added date and time formats for burnprograms
19990115	label format burnprograms; no write empty ini
	Sync magdevice0 with DataDir; %% and %p formats
19990315	Added EchoNumber in image table - used to separate PD,T2
	Completed dgatesop.lst with Philips, GE, RT
	Added NumberOfFrames in image table - to find multiframe
	objects
19990413	truncate QUERY request depending of level
19990510	Allow AEs starting with a digit (Siemens MRI)
19990527	Revision 3 of database layout (birthday, sex, bolus)
19990902	Added load/store of mirror devices and export converters
19990905	Switched word wrap off for memo's
	Added DcmMoveFilesHere on right click of copy; but seems to
	crash; Problem: if we pass DcmMoveFilesHere servers
	AE/PORT saving slices from own server will fail. Now pass
	'test;1234'
20000127	Hide archiving tabsheet in new install; Add NKI sops to install;
20000128	Added extra GE sop; compressmode 2; disabled movefileshere
20000316	version 1.3.5: Integrates dgate as service operation
	New install does not start dgate right away
20000317	Truncate patient list if too long
20000318	'$ RESTART' as console message kills and restarts server
	'& DGATE xx' as console message runs dgate with args xx
20000323	Added query sop choices through level dropdown list
20000326	Service supported for more than one server:
	servicename=AE; port passed as /process dgate.exe -!port

	Removed need to enter password for SQL access
	Save and restore user and password in dicom.ini
	Added 'ping' option for remote check of archiving:
	Deletes ConquestDICOMServer.Ping and makes
	ConquestDICOMServer.response with archive status
	Allow up to four servers at the same time, also as services
	Note: only the first server will start correctly on boot!
	(on boot, the /process parameter is not passed and the
	default IP message port will be used -!1111); Presence of file
	USESQLSERVER allows install on SQL server
	Presence of file USEMSACCESS allows install using access db
20000328	Added tests of local server at key moments
	added -noconfirmquit option; show VERSION in caption
20000402	Install service with startup at right socket
	Read service socket from registry on startup
20000403	Improved socket handling; fixed space in path when not
	service; space in path blocks service install.
	Now recognizes installed but not running service
	Number of servers on one PC is now unlimited.
20000417	Fixed MSACCESS ODBC creation
20000501	ExportModalityx should be UPPER-case
20000528	Added "force display of large image", "remove image from
	database", "run external viewer" and demoviewer option
	Removed '.' as workdir from runprogram etc (allow bat files ?)
	Added democopy option: copy incoming to dir + CallingAE.v2
20000529	Merged two changes
20000529	Release to 1.3.6
20000616	Attemp to create NewInstallForm database selector
20000625	Added NewInstallForm database selector; default to
	MSACCESS
	Added Send ... To menu items in popupmenu
	Removed '*' items from Dicom system selectors
	Added Send Selected Images for more flexibility
	Added animated display menu options
20000626	Added Send Selected Images selector window
20000701	Some adaptations of Send Selected Images;
	MaxFileNameLength
	TrimRight strings in query - trailing spaces depend on db
20000707	Added Edit Database by Hand menu option
20000808	Added ,0 code in timed archiving
20000915	Added ListenSocket.Addr (0,0,0,0) in multi-app mode
20001107	Added CheckBoxViewIncoming for demo display of
	incoming images
20001108	Display originating server on incoming image;
	Disable menus when the ViewIncoming option is selected
20001129	Added fix so that DICOM.INI may contain UNC path
	Added menu choice to change ID of selected series
	Version to 1.3.7
20010312	Trimmed remote IP so that hostnames can be resolved in
	CqDicom.dll
20010318	Trim servername and ip;
	alt-rightclick the service buttons installs service 4 times
	e.g., at ports 5678, 5679, 5680 and 5681 (all with same data)

	This may be used for efficiency and to limit the effect of crashes; Version to 1.3.8
20010327	Always pass curdir to runprogramxxx and startprogram - required because directoryview changes current directory!
20010328	Uppercase account for service; colors for archive status
	Added verify mirror disk button; burn only once per time
	Show date and time for archival steps; added KeepAlive
	Added MirrorVerifyTime (verifies whole MAG0)
	Added conquestdicomserver.log with major messages
20010405	Added comma-separated list option for patid in query page
20010406	Ctrl-dblclick adds patid to comma-separated list
20010406	All status memo's are now limited in length and save to separate log files
	Added (and disabled) simple zip code for log files per day
20010409	Do not log query page
20010409	Added Tape backup page; replace few GetCurrentDir by CurDir
20010410	Added timeouts (10s and 5 hours) to tape backup
20010412	Separate tape backup button - some fixes
20010416	Improved anonymize and change patient ID using new dgate –f options; Added drag and drop interface to add files to server
20010418	Changed description of forced backup set; refuse dropped directories; Version to 1.3.9
20010418	Update maintenance memo during drag and drop
20010418	Fix: timer4 was enabled if no KeepAlive specified in dicom.ini
	Hide tape backup page in new installation
	Added default install button in firstinstall
20010419	Added anonymize and change patient ID for study
20010502	Added DeleteThisStudy/Series
20010830	revision 4 of database definition (extended)
	Added ExportStationName in dicom.ini
	Updated dgatesop.lst to conform to DICOM 1999 final text
	Version to 1.3.10
20010903	Suggest .\username as account
20010904	Fix: Query was freed twice when a DicomMove failed
20011108	Added automatic zipping of log files
	Make sure that tape backup and archive pages are not shown
	Added save/restore of ExportFilter settings
20011109	Small fixes:
	do not write empty configuration strings (empty<>default)
	keep some settings with original case (see sorg)
	use StrToIntDef to avoid exceptions on invalid settings
	Added ZipTime as configurable
20011127	Added SeriesPat and ImagePat fields to DICOM.SQL
	Surpress fail message box when using SQL server
	Version to 1.3.11
20020402	Adapted controls.pas: exception handling in finddragtarget and findvclwindow
20020409	DB rev 6: added frame of reference UID to series
20020416	Store/save UIDPrefix for in dicom.ini
	When creating dicom.ini, create unique UIDPrefix: '1.2.826.0.1.3680043.2.135.Date.Time
	Added configurable TestReadTime: regular check of MAG0
20020417	Fix: QueryResult has not necessarily 64 char

	Renamed some data structures
20020422	Do not save empty UIDPrefix; fix change patid for study
20020424	Added simple weekly checks page; mail ALL failures
20020426	Fix in mail sender list; use first e-mail as 'to' address
20020428	All recipients show in to: header
	Only serious error messages have *** in string
	Added MailCollectTime and MailWaitTime
	Avoid starting check more than once
20020510	Added CheckDicomSubmits (send mail when users forgot to send images to the PACS)
20020513	Checks: empty time runs all day; added log header/footer
	Updated CONTROLS.PAS: more exception handling
	Fixed reading of weeklychecks; display CD num in header
	Fix warnings and patient ID checks in CheckDicomSubmits
20020515	Added ImageType to database (rev 7)
	Added find missing patients button;
	allow more than one weekly check time (; separated, not adjacent)
20020515	Fix missing pats when query empty
	Added grab options to weekly checks
20020517	Changed StudyModality to 64 chars (e.g., fits : CT\MR\PT\XA\ST\MG\MS\RTIMAGE\RTDOSE\RTSTRUCT\RTPLAN\RTRECORD)
20020518	Fix in weeklychecks tag: too many with tag 0
20020519	Fix in rev 7 db definition: AcqDate is now SQL_C_DATE
	Added FixPhilips in DICOM.INI
20020520	Use DGATE.EXE for grabbing
20020522	Fix reading of entries with an '=' in e.g., dicom.ini
20020524	Fix acrnema.map problem with new install
20020529	Fixed duplicate mailing of messages, added WriteMemo
	Added archive.log; extra parameter for regen for DBASEII
	Removed MessageBoxes
20020609	Read and write FileCompressMode, default remains 2
20020613	Added alt-drop code: enter with new patient ID
20020819	Basic printer support; view incoming shows printer data
20020819	Process messages as files are dropped
	Print incoming imageboxes on default printer
20020821	Printer accepts landscape and portrait any pictures per page
	Progressbar shows printer queue activity
	Note: printer queue is single user (but may be fixed, using film#)!
20020823	Added print options in browser - print to local dicom server
20020825	Headerlister is modeless - added CTRL-A, CTRL-C, CTRL-F, CTRL-S, F1, F3 end ESC
	Printer has progress hook - required to avoid socket data loss
	Selection of print page format; edited info text
	Added all 1.3.11 fields to edit database by hand
20021015	Start deleting patient started delete "=ALL when no patient in list!!!!!
	Protect all pop-up functions for no selection
20021016	Better support for copying large #patients, even if one or more missing
	Added denormalized database option (for DBF without ODBC)
	Removed obsolete magdevice button
20021017	Added "" around dropped filenames; use filter instead

	of master-detail (requires index) for built-in dbf support
	Version to 1.4.0; added dropping of directories
	Added UID counter passed to dgate to avoid UID problems
20021018	Fixed browser fail and missing dbase dir after non-odbc install
	Limit dbase list in browser (alternative to image) to 100 lines
20021020	Added Kill and Restart the Server weekly check (packs built-in dbf); Fix reading of database name if not default
20021021	Small fix in maintenance memo for very long strings
20021028	Also denormalized series database; default de-normalize study (rev 8); Show denormalized study entries in database editor
20021029	Fixed query keys transmittal (sent sop when not needed)
20021213	Added EnableReadAheadThread as configurable parameter
	Disabled GECTStorage amd GEMRStorage in dgatesop.lst
20030113	Version to 1.4.1; Fixed keepalive option (was never enabled)
	Added PatientQuerySortOrder and such
20030128	Fix update of headerlister when no image shown
	Make DBF table links case insensitive
20030319	Fix: ImageDB entry 'ReceivingCoil' is 16 bytes (not 12)
20030324	Start on 1.4.2: db rev 10: made ReceivingCoil 16 wide
20030402	Merged above two changes
20030409	Handle DicomPrint error; several path fixes in tape-handling
20030613	Catch WM_QUERYENDSESSION: shutdown disables close dialog
20030628	Fix that more than one dropped directory will be loaded
20030706	Prepare for release 1.4.2; new dicom.ini; kill server
	Compression column in acrnema.map
20030707	Added manufacturer to denormalized db (rev 11)
	Write registry key HKEY_LOCAL_MACHINE\SOFTWARE\NKI AVL\Conquest\Dicomserver\SERVERNAME with values: directory=path without trailing backslash and laststarted=yyyymmdd. For use by Dicom-works only.
	Note: servername changes are updated on GUI startup only.
20030708	Made JPEG compression configurable (affects dgatesop.lst)
20030709	Write version into registry
20030710	Install service as system account (no user required)
	Fix attempt to mail when not wanted
	---------- release 1.4.2 ----------
20030717	Fix problems when registry access fails
20030809	Will automatically use ADO or MDBF when BDE not installed
	Set version to 1.4.3
20030810	Log used DB engine; Added partial ID matching for MDBF
	Default enable uncompressed button before install
	Force user to push 'Save config button'
	Added some text to install and maintenance pages
	Do not display images when on jukebox (use force display)
20030819	Made max drop filename length longer (256->1024)
20030905	Date of zip file is one day before if zip before 8 in the morning
	Hide external viewer menu directly after install
	Optional configuration of SendUpperCaseAE added
	Removed obsolete flush button
	Do not allow install in directory with spaces in its name
	Removed faulty extra text from install page
20030907	Fix ODBC generation for directory with spaces
	Just warn against directory with spaces

20030909	Test write access to log files prior to startup
20030920	Mail messages that contain 'fail' instead of 'failed' Added tape full warning (that will be mailed) Added enables for timed archival (to allow retry/timer disable) Changed order of burn CD message / tape backup Added NextSlotToUse (slot n) next to NextCDToBurn (JUKEBOX0.n); % in burn parameters %n = NextSlotToUse, %c = NextCDToBurn; Manual archive buttons control checkboxes as well
20030921	CTRL-Double click "automatic archival label" starts archival CTRL-Double click "weekly checks time" starts check Added NightlyCleanThreshhold parameter (clean # MB at 01:00)
20040401	Added ImageID to database; version to 1.4.4 Show ImageID in database editor and browser
20040402	Allow anonymize etc on MAG0..MAG9; changed datasource name (now system DSN)
20040425	Added DoubleBackSlashToDB to dicom.ini
20040426	Version to 1.4.4a
20040528	Use built-in servertask commands for maintenance and browser
20040530	Browser for built-in DBASEIII driver uses extract server command; Database editor to read only for built-in DBASEIII driver; These changes allow efficient use of in-memory index for dbaseIII; OK for 10^7 images when patientID, studyUID or seriesUID passed in Queries; Added PackDBF and IndexDBF to dicom.ini; Reworded some in popup menu; wait for patient deletion to finish; Fix refresh for sql server
20040601	Added LongQueryDBF flag
20040605	Fix extract when no patients; kill server stops loop of server tasks; start server on activate (after windows shows) Pack the Database as Weekly Check Action
20040606	Fix in formactivate; display @ startup
20040610	use servertask to clear index and rebuild it in built-in dbase mode
20040614	small fix in keep server alive; added nightlymove option
20040615	small fix in nightlymove option; also reindex after regen device
20040713	Added FixKodak; version to 1.4.6
20040722	Installation defaults for FixPhilips and FixKodak are now 0
20040804	Added *.lst to zipped log files; added bug report option Version to 1.4.7
20041029	Added merge and split series options; Process messages during long GUI actions if possible (no DB)
20041030	Modified GUI of merge and split, process messages
20041101	Check for MAG storage for split/merge Delete from DB does not use image (for orphaned DB) USEDBASEIIIWITHOUTODBC replaced by Pos('\', Datasource)>0 while running
20041102	Added nj compression mode
20041108	Added warning when alt-dropping file(s) with $.. as Patid (debug)
20041128	Fixed wording of delete messages: works on all mag devices Fixed problem in DeleteThisSeries, Anonymize, and change Patient ID: last series could not be modified/deleted
20041129	Made font size of server status window selectable; Made debug

	log switchable; service will continue to log to file even if user interface is closed (but with different date/time layout) Now can save and use acrnema.map without server restart Fix startup problem when disk 'c' not available
20041201	Backup fail 1..5 files temp logged as ALMOST OK -> continues
20050106	Fixed install as four services, fixed nightlymove amount Is now nightlymovethreshhold - free space: i.e., attempts to make nightlymovethreshhold MB free space Fixed nightlymove: forgot to pass ',0' for MAG0 Also, try move even if select failed to avoid stall after partial failed select
20050109	Made backup of and warn when dicom.sql is overwritten Added TCPIPTimeOut, FailHoldOff, RetryDelay, QueueSize Version to 1.4.8
20050114	On startup ask to delete ExportFailures*, CopyFailures*
20050422	Added BurnTime2 (2 dvds per day) and BurnWeekend (all weekend through)
20050429	db rev 14: added worklist support
20050829	recurse directories when dropping files to ease load dicom CD
20050831	Added find modality worklist to dgatesop.lst
20050901	Added clear worklist button, version to 1.4.9, WorkListMode
20050905	Modality worklist query, auto append worklist to dicom.sql
20050907	Avoid dicom.sql message in new install, v* and s* in acrnema.map
20050912	Small changes to dicom.ini, dicom.sql, dgatesop.lst; added SQLHost. Small change to mdbf: extra refresh avoids browser failures
20051024	Version to 1.4.9a: recompiled with patched controls.pas
20051230	Version to 1.4.10 Moved clear worklist button and add pack database button Added warning when worklist is added to dicom.sql: clear worklist required Added settings: DebugLevel, CacheVirtualData, LargeFileSizeKB, VirtualServerFor# enable study controls prior to return if same (none) image shown
20060102	Update of hints
20060103	1.4.10 Release
20060201	Added K-Pacs/EZDICOM based viewer
20060312	Keep case of VirtualServerFor; Message buffers from 1024 to 8192; Open k-pacs viewer on correct series; version to 1.4.11
20060314	Added experimental native Mysql access; installs when libmysql.dll is found - uses mysql version 4.1.14
20060315	Keep case of FileNameSyntax
20060328	Updated hints and file version for release 1.4.11
20060618	Set default user for mySQL to root (thanks Chris Muller) Seems to then also work with mySQL 5.0.22, version to 1.4.12
20060707	Bug reported by Paolo Marchesi: save config loses DBF Now only set to default when previous does not exist Use same zipmaster as in previous versions (zipmaster\org)
20061101	Added SeriesDescription to query page
20061129	Added control for debuglevel, and allow queries on UID Double click queries labels to change mode

20061130	Added new dgate parameters; consolidated debuglevel control and param; Made application forms resizable and set size constraints; Small font control works on all status pages; Double click image to force display it
20061220	Pass Tempfile to kpacs viewer form
20070123	Added processfilter to allow browsing of patients with ' in patientid
20070126	Importconverters stuff and ForwardAssociationRelease in dicom.ini; Version to 1.4.12b
20070201	Version to 1.4.12c
20070204	Fix in generation of UIDPrefix: was not automatically generated on startup
20070206	ODBC buttons will also create database for SQL server
20070207	ODBC button creates database for native mysql
20070211	Native MYSQL did not create indices during install Fixed selection of DBF (with odbc)
20070221	Started to SQLite (not yet fully functional)
20070305	Version to 1.4.13alpha
20070316	Use | in patid instead of , in drag and drop to allow dropping files with a , in them while changing patientif (not backwards compatible)
20070415	Back to , in patid in drag and drop: ljz fixed it in dgate.exe Added Prefetcher flag in dicom.ini (default 0)
20070520	Fixed missing completed message in regen single device
20070705	Added BrowseThroughDBF: unified browser used for SqLite Works for other datasources but not configured as such Small fixes in completed message in several regen functions Fixed view/edit database second time round (enable)
20070706	Auto create mysql registry settings for native mysql Disallow anonymize and change to empty name Message on end of odbc or db creation Version to 1.4.13beta
20070708	Patched forms.pas for Chad Moser's crash problem. Added BrowseThroughDBF setting in dicom.ini Default 1 for SqLite, 0 for others Use extract: also for dbaseIII: to avoid multi-user problems when browsing and writing at same time
20070709	Small fix in dbf+bde browsing Auto register webserver\ActiveFormProj1.ocx if found Do not use extract: for dbaseIII: browser does not work while indexing
20071030	Also delete DelayedFetchForwardFailures* on startup
20071103	Added LRUSort, AllowTruncate, ForwardCollectDelay, MaximumExportRetries, MaximumDelayedFetchForwardRetries Version to 1.4.13
20071104	Added DecompressNon16BitsJpeg, UseBuiltInDecompressor Made IncomingCompression editable (double click label) Made FileNameSyntax editable (double click label) and allow choice of V2 and DCM through radiobuttons
20071114	Save root password while installing for mysql with password
20071115	Disabled multi-process mode in RunInThreadedModeClick to allow multiple saves of ini file during install (for above password)

20071115	Save password and username for SQL server install as well
20071116	Longer default password for sql server 2005
20080124	Added mailer settings in dicom.ini Disable LittleEndianExplicit on install Added configuration for mode UJ Database revision 16: Moved Stationname and InstitutionalDepartmentName to series table Added extra warning when revision 16 not detected moved Stationname and InstitutionalDepartmentName in view/edit database Version to 1.4.13a
20080126	Automatic add backslash to read MAGDEVICEs etc and give a warning message
20080322	Version to 1.4.14beta
20080322	Fix first install bug in test dicom.sql; fix send image crash in UID mode; display selected UIDs in query/move page added PadAEWithZeros and IgnoreOutOfMemoryErrors
20080818	Database revision 17: extended size of EchoNumber and ReqProcDescription to 64; EchoNumber, StudyModality and ImageType are DT_MSTR: multiple values; use Institution (8,80) instead of InstitutionDepartmentname (8, 1040) Added WorkListReturnsISO_IR_100
20080819	Version to 1.4.14
20080831	Default ForwardAssociationRelease to 1
20080902	mvh Added EnableComputedFields, default 0
20081104	Fixed install as four NT services: trim IP port before convert to int; Fixed save of database name to dicom.ini for mysql install version to 1.4.14a
20081121	Added Postgres support; attempt fix MySQL support Automatically choose the 64 bit dgate if possible
20081123	Retry server test for 4 sec after db install
20090203	Trim data read from dicom.ini to remove trailing spaces
20090205	Added MailPort option
20090411	version to 1.4.15alpha; Added PrintSquareLandscape, max converters to 19, VirtualPerSeries0..9, RetrieveResultConverter0, QueryConverter0, WorkListQueryConverter0, RetrieveConverter0 Let OCX registration fail without warning (for vista)
20090927	Added RetryForwardFailed
20090927	Optionally use 7za.exe instead of zipmaster (when zipdll.dll deleted); Added RetryForwardFailed
20090928	Default sql password to conquest1415;
20090929	Added ImportExportDragAndDrop flag (default 0)
20090929	Version to 1.4.15
20100202	version to 1.4.16alpha; check other GUI running; jpeg2000 stuff; LossyQuality
20100206	use convert_to_bmp in browser to allow JPEG2000
20100207	export servertask; added spinedit for frames; UseKpacsDecompression flag
20100207	version to 1.4.16alpha2; made it a const; removed warnings write zips to folder logs if exists; create logs folder on install
20100227	version to 1.4.16alpha3; added DICOM print to selected AE
20100827	version to 1.4.16beta; Fixed display of jpeg2000 config in GUI

	LargeFileSizeKB to 4096; note: jpeg2000 requires HAVE_J2K in cqdicom.dll; Fixed viewincoming; fixed enable NJ mode choice logic; fixed service detection to warn for existing but not running service
20100828	Automatically start installed but not running service when GUI comes up; Added QueryResultConverter and ModalityWorkListQueryResultConverter
20100905	Added UseBuiltInJPEG and IgnoreMagdevicethreshold flags
20101003	Added browsepatient command; show record counts in browser hints; Fixed frame number passed to BMP generator Improved query page text selection when brackets in text
20101003	Version to 1.4.16beta4
20101110	Typo in reading UseBuiltInJPEG (save will always write 1)
20101111	Version to 1.4.16beta6; added tests to service control Issue: uninstall often fails (and leaves dgate.exe running)
20101116	Fixed uninstall in dgateserv, changed messages More checks in service code
20101122	Add option to log to file only with gui running Added export to zip file options
20101123	Default EnableComputedFields to 1, added OverlapVirtualGet, ArchiveConverter0, update acrnema.map header with ui, ul, ue
20101212	Right lock new checkbox; version to 1.4.16
20101212	Disabled BigEndianExplicit for new; default file type to DCM
20101212	Removed nop export script
20101213	Enable delete even if no file found; stop zipping and cleanup (dgate will do it) if only log to file enabled
20101213	Fixed update of grid hints for totals: note count = unfiltered
20101220	Block spinedit for 1 frame image
20101227	Reset CheckBoxOnlyLogToFile when restarting server etc
20110105	version to 1.4.16rc1; default BrowseThroughDBF=1 for SQLSERVER
20110123	version to 1.4.16rc3; other support for other sections in dicom.ini
20110326	version to 1.4.16rc6; Also show incoming 'Rewritten' images
20110329	Version to 1.4.16; added MAGDeviceFullThreshHold
20110331	Added NoDICOMCheck; release date
20120818	Padd text queries with spaces not nulls; fix setting JL compression; Increases convert_to_bmp resolution for print jobs and bmp creation; Display some info in the query window on startup; delayed GUI test; Version to 1.4.17
20120826	Accept server messages without \n; backup Failure files when deleting
20120912	Fixed tab order of all server tabsheets
20121016	Document J3NN .. JLNN in acrnema.map
20121212	1.4.17beta
20130517	Fixed anonymizer; 1.4.17
20130517	DoubleBackSlashToDB = 1 could happen when installing MS SQL server
20130522	Added WorkListTableName to dicom.ini
20130523	More anonymizer work
20130813	Choose .dcm extension radiobutton for lua file name syntax Added AllowEmptyPatientID to dicom.ini

	Added missing converters to dicom.ini code
20130813	Version to 1.4.17b, release date
20131013	Version to 1.4.17c, release date
20131123	Fix uid based image query, broken due to 20120818 fix
20131219	Fix mailer when weekly checks config is absent
20140304	Added W* wildcard AE
20140309	Updated dgatesop.lst to revision 5
20140309	Version to 1.4.17d, release date
20140618	Updated dgatesop.lst to revision 6
20140618	Version to 1.4.17e, release date, LargeFileSizeKB default to 100000
20141102	Only set DcmSetProgressHook on DcmMove, reset after use - needed for latest cqdicom
20150718	Adapted for Delphi XE8, removed DBE and slow directory tree selector
20150718	Create custom controls runtime, removed zipmaster, direct sqlite and mysql access
20150719	1.4.19alpha
20150730	reorganized menu for clarity; hide "force display of large image" if not needed; added advanced modify images dialog
20160306	Added image commands to modifier and delete; hide refresh command and animation menu; Added JPEGLS options (bug: quality not yet saved; default j7 quality is lossless)
	BrowsethroughDBF now default on; simplify dicom.ini by not writing defaults
	Navigating series removes image; click series to display
20160307	Added testmode const: 0 is normal 1 is show servertask commands with optional execute; Version to 1.4.19beta and builddate; new Anonymizer at 4 levels using modifier: command
	new ChangePatid at 4 levels usign modifier: command
	new ExportAnonymousZIP at 4 levels; new DICOM move at four levels
20160308	Greatly improved testmode; used it to fix move: call; UseKpacsDecompression default off
	Enable/disable menu items according to image visibility in browser
	encompass servercommands by luastart:servercommand[[..]] to run in background
	Enable JpegLS in dgatesop.lst and document in acrnema.map header
	Removed MAG only warnings; fix modify patient ID script syntax
20160309	clear progress data when read fails; wait until database file is ready to avoid 'image not found'
	Added refresh logic (after progressbar disappears)
20160310	Show **working** and #images; go back to this/next record at refresh
20160312	Show DICOM file in explorer; ImportExportDragAndDrop default to 1
	Updated hints; click image now shows imagea and set focus to image list for wheel
	retry fixes failed to find image on first opening browser; beware for deadlock

	Filter patients on ID using extract:1 command; test on 15000 pat list
	Removed BrowseThroughDBF (always on)
	Keyboard shortcuts F2..F9; pgup/pgdown/num+/num-; Show study/series sequence number
20160313	Removed commented code; show keyboard shortcuts; F2=KPACS viewer / F11=show database
20160314	Added some code to reduce flickering of image; Label25 shows slice / total; Show n/total for series and studies; disable modify - test syntax when no image shown
	Left mouse slices through multiframe object; hint on spinedit
20160315	Code review, reverted sockets to Recieve; jpeg2000 setting read fix
20160316	1.4.19beta; allow optional scripted bitmap conversion; uncompress on export; experimental sort
20160317	Use new todbf: command instead of extract for more control
	Added sorting on/off by clicking column headers; limit patlist to 10000; Disable ODBC button for SQLITE and DBASEIII; warning hint for ODBC on win64
20160318	Show sorting in table hint; fix zip decompress scripts
20160319	Move curdir to tempdir (make sure no dbfs there)
	Delete temp files when done with them
	Install method; copy files from install32/64 when dgate/64 not found
20160319	1.4.19beta release
20160717	Change patient ID option now leaves patient name the same
	Made border of install page wider
20160827	Allow larger film sizes in printer; list defined in gui: SendSelectedForm.ComboBox1; Save as bitmap also does JPG and GIF (GIF is animated for multiframe); Protect browser when dgate crashed: test dbf files really appear. Mouse up/down scrolls through slices; left right through frames
	Fix sorting for Postgres; coded running server test on install but does not work; Suppress most browser messages in server; removed some compiler warnings; Fix display of jukebox number in browser; 1.4.19beta3 release
20161120	Find missing patients also now works from study root level
	Disable progress bar when debug log is enabled
	Added code to update UIDMODS table in verify database installation button; Version to 1.4.19
20170208	Removed ADO components; prompt ID/newid as filename when zipping; Block test database does frame table update until NewInstallDone; Release 1.4.19
20170419	Fix refresh levels 2 and 3 (reversed table refreshes), added merge study, fixed merge series, version 1.4.19a
20170430	Release 1.4.19a
20170405	Default install fix for sqlite
20170729	Massimo: added missing " at end of dicom.sql
20170922	Added headerbmp, footerbmp, backgroundbmp options for printer
20171001	Made them work; version to 1.4.19b
20180204	Added checkbox to start/stop/show Ladle webserver; version to 1.4.19c
20180315	Added C-GET to dgatesop.lst generator

20180317 Only show webserver button if ladle.lua exists
20181111 Updated version numbers of dgatesop.lst and dicom.sql
20181111 Set build date to today
20181115 Added RetryForwardRemoteDICOMError
20181125 mvh Added $ QUITGUI $, $ RELOADACRNEMA $, $ RELOADSETTINGS $ commands
20181211 mvh Copy dgate.exe to cgi-bin and newweb folders to reduce zip size
20181214 mvh Update dicom.ini and acrnema.map in cgi-bin and cgi-bin/newweb
Put AE and port of server self in acrnema.map when saving config
Version to 1.4.19d
20181216 mvh Use lua code for query and move to reduce dependency on CQDICOM.DLL
20181217 mvh Also do this for find missing patients; fix modality worklist query
remove studyroot query items (now used default)
Added error handling in lua queries
20181218 mvh Added simple error handling to lua moves
Added lua code for dicom printing
Set print bitmaps defaults to print_header.bmp print_footer.bmp and print_background.bmp
20181218 Added KPACS define; if not set use webviewer on Ladle instead
20181219 Fixed lua code of find missing patients
20181220 Testing TCP for progress socket
20181221 Print through progress socket, avoiding missing images
20181227 Use KPACS define; use -x! for TCP progress socket;
fix process number display in progress socket
20181231 Version to 1.5.0-alpha
20190103 Typo and allow Progress while debug log on
20190103 Newweb no longer needs acrnema.map; removed cqdicom related code; unused variables
20190114 Remove writing of registry on startup
20190302 Fixed a small bug in that
20191011 Fixed anchor of internal web server button; Added LadlePort config
Also nightly zip DicomAnonymized_Log* files (wip)
20191019 Cast for compile issue in xe8, version to 1.5.0alpha-t4
20191025 Fix progress bar (ignore empty messages), disable ProgressActive counter; increase size of visual log
20191215 Fix ladle port default; version to 1.5.0beta
20200110 Db revision 19; use QRows and QColumns as field names
20200203 Copy lua5.1.dll to web server; list time of lua5.1.dll in bugreport; version 1.5.beta2
20200204 Small fix in that for newweb
20200311 Version to 1.5.0beta4
20200314 Version to 1.5.0; jpeg support renamed and default ON during install
20200704 Version to 1.5.0a; Fix case of database table names
20201002 Version to 1.5.0b; Fix DiskFreeGB()*1024
Fix ALTER TABLE UIDMODS syntax; comparison in find local missing was reversed

20201101	Added optimisation of UIDMODS index under verify database button
20210203	Reduce updates of serverstatus using stringList and writeMemoSl
20210204	Make sure stringlist exist; consistently base all files on curdir
20210206	Verify database makes joint DICOMTables indices, fix UIDmods check for sql server Small change in logic of updateTime; also call .Update on Memo setting of debuglevel; onClick comes before change; also print value in log
20210208	Keep lastUpdate and lastWrite time to make it work
20210210	Blocked out debug update source display, fixed race condition in timer
20210510	Remove sequence query results prior to display
20210620	Added regen folder button, moved done message of regen device to correct page
20210621	Alt-regen folder load text file with one folder name per line; push again to stop
20210630	No missing \ alert on linux, GetTempDir adjusted for linux (wip)
20211003	Added GuiToServerFilename to enable mix OS running (wip)
20211010	Merged Luiz extra controls for move to MAGx (but simplified)
20220828	Fix run webviewer from browser; write port into 3 config.php file at install; copy dgate.exe to newweb app; update build date
20220829	Allow threshold and treshhold in config files, write with correct spelling
20220912	Set ladle webroot to Global.BaseDir..[[webserver/htdocs/]]
20220912	Added popupmenu to choose app when right-clicking built-in webserver
20220919	Right-click bugreport buttons shows server folder
20221031	Enable jpeg on startup to sync with checkbox
20230607	Update version number
20230620	Set UTF8FromDB and UTF8ToDB for postgres
20230701	1.5.0d release
20240922	Limit time in UIDPrefix default to 5 digits
20240923	Check ladle button when opening webviewer
20240924	Allow simple comments in acrnema.map; wordwrap its editor
20240924	1.5.0e release
20250702	Fix zero results error in query
20250831	1.5.0f release
20251011	Skip server test on NewInstall; tested port stays open blocking installation in Wine under Linux
20260810	Move all temporary files to GetTempDir; change GetTempDir to curdir if there is no access
20260813	Auto configure BackupSchedule for Sqlite (required folder backup); call now require([[ladle]])()
20260826	Make sure conquest_browser is also created during install
20260904	Adapt hint to LadlePort; use valid scripts on starting
20260908	Version to 1.5.0g, update build date
20260915	Ask for MySql host(:port) on first install to allow non-standard port
20260915	Added lua console button
20260917	Added wait loop to kill and restart the server

20260918	Auto hide progress bars after 5 timer ticks
20260919	Use variable amapFile, update ZeroBraneStudio files, no longer update cgi-bin files
20260920	Optionally support acrnemamap entry in dicom.ini, reads amapFile
20260920	1.5.0g release
20261008	Added CheckBoxRestrict, allowonlymapped, allowedIPs and DeniedIPs
20261008	Write headerbmpname, footerbmpname, backgroundbmpname and ladlePort
20261009	Write MyACRNema to webserver and zbs dicom.ini and -h to config.php files
20261027	Keep SC lines in dicom.ini to prepare for Storage Commitment by mmd
20261027	Added StorageCommitmentPushModel in dgatesop.lst, but blocked out by default
20261030	version to 1.5.0g5; enabled StorageCommitmentPushModel
20261031	Alt-drop suggests patientID from directory name if one directory is dropped; added CheckIPofRemoteAE
20261101	allowonlymapped checkbox hint shows it disables wildcard AEs
20261102	Fix alt-drop put folder name into suggested patientID; build date
20261108	Forget to read CheckIPofRemoteAE from dicom.ini into gui
20261115	Fixed forgotten write of DeniedIPs; Added wildcard warnings; access control page
20261116	Added nprint and ncommit
20261117	IPs array size, build date

SERVERABOUT.PAS (part of conquestdicomserver.exe)

19980405	Created
19980618	Added reference to Fpiette; use form also as file lister
19980624	Removed line about backdoor
19980721	Removed line about Mark Oskin going away
19990527	Release to 1.3.3
20000128	Release to 1.3.4
20000316	Release to 1.3.5
20000529	Release to 1.3.6
20001129	Release to 1.3.7
20010318	Release to 1.3.8
20010318	Release to 1.3.9; fixed dbaseIII text
20010830	Release to 1.3.10;
20011127	Release to 1.3.11;
20020816	Release to 1.3.12;
20020825	Made Lambert's e-mail address more prominent
20021018	Version to 1.4.0; added release date
20021020	Update release date
20021028	Update release date
20021215	Update release date
20030113	Version to 1.4.1; release date
20030128	new release date
20030303	new release date
20030710	Version to 1.4.2; release date

20030809 Version to 1.4.3
20030810 Added reference to offis, zipmaster, and mitec
20030922 Release date
20040402 Version to 1.4.4
20040406 Release date
20040426 Version to 1.4.4a; Release date
20040615 Version to 1.4.5; Release date
20040722 Version to 1.4.6; Release date
20040805 Version to 1.4.7; Release date
20041129 Release date
20050106 Version to 1.4.7a; Release date
20050109 Version to 1.4.8; Release date
20050303 Release date
20050912 Version to 1.4.9; Release date; worklist info
20051024 Version to 1.4.9a; Release date
20060103 Version to 1.4.10; Release date
20060314 Version to 1.4.11; Release date; new acknowledgements
20060402 Changed fpiette's website; Release date
20060708 Version to 1.4.12alpha; Release date
20061222 Version to 1.4.12; release date
20070126 Version to 1.4.12b; release date
20070201 Version to 1.4.12c; release date
20070706 Version to 1.4.13beta; release date; sqlite reference
20071116 Version to 1.4.13; release date
20080322 Version to 1.4.14beta; release date
20080831 Version to 1.4.14; release date
20081121 Version to 1.4.14a; release date
20090411 Version to 1.4.15alpha
20090927 Version to 1.4.15
20100202 Version to 1.4.16alpha
20100207 Version comes from define in the serverdriver
20160313 Update
20240923 Take eZdicom out of acknowledgements; add Ladle

SENDSELECTED.PAS (part of conquestdicomserver.exe)

MODIFYDICOM.PAS (part of conquestdicomserver.exe)

20150730 started this added advanced modify dialog
20160313 protected against missing modifier.lua
20161120 test syntax for DBASEIII now limited in functionality
to avoid it starting new database indexing
20201002 Quote command line to allow patient ID with spaces

HEADERLISTER.PAS (part of conquestdicomserver.exe)

20020825 added keyboard interface (see serverdriver.pas)
20160313 Added F9 is close
20181110 Upped search limit to 100 MB

EDITDATABASEFORM.PAS (part of conquestdicomserver.exe)
20150719 Always operate readonly
20160306 Send click messages to main form to control image visibility
20160319 F11 is close

/20161120 Hidden edit buttons; updated layout image list

ABOUTNEW.PAS (part of conquestdicomserver.exe)

20000625 Added NewInstallForm database selector; default to MS ACCESS
20010418 Changed text; added default install button
20010830 Version to 1.3.10
20011127 Version to 1.3.11
20020816 Version to 1.3.12
20021016 Added DBF without ODBC
20021017 Version to 1.4.0
20021018 Default to USEDBASEIIIWITHOUTODBC
20030324 Version to 1.4.2
20030810 Version to 1.4.3 - removed ODBC DBASEIII choice
20040102 Version to 1.4.4
20040426 Version to 1.4.4a
20040530 Version to 1.4.5
20040713 Version to 1.4.6
20041029 Version to 1.4.7
20050106 Version to 1.4.7a
20050901 Version to 1.4.9
20051024 Version to 1.4.9a
20051230 Version to 1.4.10
20060313 Added experimental native Mysql install when libmysql.dll is found
20060618 Version to 1.4.12
20070126 Version to 1.4.12b
20070201 Version to 1.4.12c
20070305 Version to 1.4.13alpha
20070305 Added experimental (not fully functional) native SqLite install when sqlite3.dll is found
20070706 Version to 1.4.13beta; sqlite always enabled (driver linked in)
20071103 Version to 1.4.13
20080322 Version to 1.4.14beta
20080819 version to 1.4.14
20081121 Added postgres; mysql unconditional; version to 1.4.14a
20090411 version to 1.4.15alpha
20090927 version to 1.4.15
20100202 Default to SQLITE; version to 1.4.16alpha
20100207 version comes from define in the serverdriver
20160318 Added UoM to labels
20260914 Asks libpq.dll/libmysql.dll location and copy drivers
20260915 Added update button to update existing conquest
20260916 Make empty folders such that is can install a minimal version

WSOCKET.PAS (part of fpiette in conquestdicomserver.exe)

20150718 Adapted for Delphi XE8

SMTPPROT.PAS (part of fpiette in conquestdicomserver.exe)

20150718 Adapted for Delphi XE8

MDBFTABLE.PAS (Michal Mutl's Mitec dbf datasource)

20030809:	changed control page; added exception handling on CreateFields
20030810:	Added 'name*' partial key matching for filter
20030810:	Fixed huge leaks
20040530:	Fixed illegal memory access at CharToOemBuff
20080215:	Fixed empty buffer causing filter exceptions in case of no records; Open DBT file readonly
20080325:	Adapted for delphi 7
20100907:	Adapted to D2009
20130730:	Fixed Unicode issue in ProcessFilter(), respect foCaseInsensitive and foNoPartialCompare
20131020:	Added matching *val*
20150713:	Fix in case insensitive matching for exact value
20150719:	Adapted for Delphi XE6 and XE8
20160311:	Fix ansichar / char mixup in locate

dgate.dic (dictionary file)

19990915	Moved all uneven (private) group-codes to dd-private.txt
20030706	Add NKI Pixel Data
20081104	Add 0008,0061
20100214	Added compression info
20101227	Fixed 0020,1209 etc; added Conquest private commands (in 1.4.17alpha branched to)
19990915	Moved all uneven (private) group-codes to dd-private.txt
20030706	Add NKI Pixel Data
20030802	Adjusted to dicom 2001 (retired elements still in lib)
20060913	Adjusted to dicom 2005
20090812	Added Philips private tags
20090828	Put those private tags in alphabetical order
20091124	Added more Philips private tags
20100909	Changed two MRI private tags (2005,100d) (2005,100e)
20101004	Added
20120628	Adjusted to dicom 2011 (VERS="4")
20121016	Added conquest private commands
20160425	Fix PixelPaddingValue
20200125	Added ConquestSplit, ConquestImageQueryOrder, ConquestMoveOriginator
20210620	Made 2005,1084; 2005,140F; 2005,1580 sequence to support modern Philips MR
20221016	Added conquest console command support elements

service.lua (web-based installer)

20170501	Release 1.4.19a
20171013	Added missing " in dicom.sql's last line (not in release 1.4.19b)
20180315	Added C-Get in dgatesop.lst generator
20181110	Updated dgatesop.lst and dicom.sql version number
20181111	Unconditional update web interface when configuring; fix name of a lua file
20181115	Use mode=start in webserver link to work in ladle; skip web folder test for ladle

20181117	Added luasocket to linux compile
20181123	For 1.4.19c; Added configuration of web viewers
20181124	Added readOnly and viewOnly web server config, make copyfile unconditional (!) Potential (not yet developed) viewers: wadoviewer_starter, dwvviewer_starter, altviewer_starter, imagejviewer_starter, flexviewer_starter
20181125	Start and stop conquestdicomserver in windows mode; stop requires modification of GUI
20181126	Added config of Papaya viewer and Cornerstone viewer
20181129	Copy acrnema.map to web server to deal with SeLinux security; added Iframe viewer
20181229	Fix cornerstone_starter, iframe_starter, added dumpvars; take dwv and papaya out of study viewers Added WebScriptAddress and WebCodeBase to cgi-bin/dicom.ini (for Weasis)
20181230	Removed acrnema.map from web install; no longer needed
20191019	Also copy jpg(s) in htdocs folder for web install
20200110	For 1.5.0beta; add ';basedir/lua/?.lua' to package.path in dicom.ini; db rev 19
20200203	Added lua5.1.dll to web install; copy database drivers when installing on windows
20200215	Link against installed lua5.1 library in linux
20200216	Remove luasocket, lua from compile linked externally
20200216	Added -Wno-format-overflow
20200218	Allow to run direcly from dgate as command line utility
20200219	Reordered function to allow install from command line
20200220	Report compiler and nmake versions
20200226	Configuration parameters to top of file to support moved install functions
20200226	Added htmlweb variable to fix that in linux htdocs is not filled Added and tested subfunction e.g. ./dgatesmall -w. --dolua:service.lua subfunction compiledgate
20200228	Prefer /var/www/html/ from command line for htmlweb if found
20200308	Prefer /var/www/html/ from web interface, use passed temp, addlocalfile and attachfile exceptions <needs testing and updating>
20220829	Explictly state it configures CGI; Add jpg and ico to create_newweb_cgi Added favicon, cgi install source is htdocs/app/newweb; avoid null tempdir Write and configure /app/newweb, disable (but keep) config cgi interface; Updated version and date; note: temp is still null
20230607	Install dicom api and ohif app, enable ohif links from newweb; read newweb setting from app folder
20230820	Added subfunctions to compile dgate and dgatesmall completely that run from lua; suppress warnings; suppress cgi-bin and unzip warnings
20230822	Added conf parameter to reduce reliance on CGI, fix compiledgate_all for windows
20230901	Simplify server detection and no longer relies on script_name (is php now)
20230902	Fix service command for app/service and continue even if web

	folder not found
20230903	Fix test on web folder
20230909	Fixes in string processing in runLocal mode
20230909	Fixed passing port to dicom.ini
20250425	Some fixed for runlocal (ladle)
20250911	Fallback for failed jpeg-c ./configure on debian 13
20260813	Changed ladle() call

ladle.lua (built-in web server)

20181110	Release 1.4.19c
20181115	Fix default of BaseDir
20181117	Use / in folder for linux compatibility
20181218	Added loadstring and DicomObject for new serialized data
20220828	Added dicomecho as trusted function; move used newweb source to htdocs/app
20220828	Note: does not support POST multipart; cannot upload yet
20220906	Responds to redirect.lua by sending all requests to there; Added redirect method; Fixed include method (pass handleIt); give luascript handler access to require, dofile, string close files when done
20220909	Make it ladle_routes.lua; include and call router; disable 'quit' for debugging; print error message added ipairs, table, print, tostring, JSON, servercommand to luascript handler
20220911	Redirect for dgate.exe uses folder Default root is basedir/webserver/htdocs/
20220912	Returned to default root to /webserver/htdocs/app/newweb/ for compatibility; Added webroot as arg2 to startup; reenabled 'quit'; added pairs to Env
20220913	Added math to luascript handler
20220915	prepMain parses post or put message into request; CGI(") returns payload
20220916	CGI() also returns payload; correct size of payload
20220920	Added mjs to mimetypes
20221018	Added wasm; fix post without filename; added unlink writefile tempfile to env
20221018	Fixed STOW (needs multipart/related); writefile must be binary
20221022	Replaced some \n outputs by \r\n (tripped Quirt HTTP_GET module)
20230809	Fixed default webroot for Linux
20240107	Fixed HTTP 200 OK response
20240924	Reset request after quit to avoid failure to restart
20240928	Export md5
20250525	Export os if mode=service
20260120	Fixed rare crash in line 193 (a == nil)
20260810	Added streaming code by Divinus
20260812	Divinus prints more information on failure
20260812	Simplified default startup to require('ladle')()
20260813	Merged Divinis debugging
20260814	Catch]=] to avoid escaping into lua; limit request print to 80
20260815	Export tonumber
20260826	Export remote_addr; no longer export os for service mode
20260826	Fix in dgatecgi passing of client to get remote_addr

20260902 Export checkaccess
20260907 fix remote_addr (fix from Divinus)

quitladle.lua (stop built-in web server)

20180204: send request to stop Ladle webserver
20220912: changed address of quit command
20260812: use ladleport

ladle_routes.lua (routing rules for built-in web server)

20220912 First version
20220913 Fixed wadors frame access
20220914 Added ohiftop; need 5 routes to keep ohiftop/viewer
20220919 Added post to /app/newweb/dgate.exe
Extensions: modalities echo zip move
20221018 test.html, script, startscript
20221018 fix zip mime type; added attach and attachdicom; stow in right place
20221220 unlink temp file after startscript
20230808 Correct response is 200 OK instead of 200/OK; detected by weasis loader
20240205 Added cache option
20240924 Blocked out cache option
20260810 Streaming code by Divinus
20260812 Divinus fixed formatting of frame
20260813 Modified documentation a bit
20260902 Added checkaccess to control access by ip through dicom.ini

router.lua (small router for built-in web server)

* Copyright (c) 2013 Enrique García Cota
* Copyright (c) 2013 Raimon Grau
* Copyright (c) 2015 Lloyd Zhou
20220911 do not use . as separator; it made it impossible to parse DICOM UIDs

anonymize_script.lua (the one and only anonymizer)

20120827 Use script() instead of os.execute() to avoid blinking window
20130127 for 1.4.17beta: Match updated dictionary; added MaintainAge, MaintainSex,
Reversible options; use lua crc calls
20130211 Make sure PatientID used as filename has no invalid characters
20130522 Cleanup for release; fixed when birthdate empty
20130718 Set logroot not to c:\DicomAnonymized but to DicomAnonymized_Log
20130813 Command line overrules generated patientid and patientname
20140304 Remove OtherPatienIDSequence
20140309 Protect against any missing data
20140618 Protect against missing PatientID (if used for queries)
20160113 Added staged operation using "subjectkey|stage" command_line

20160118	Original birthdate and sex coded with original patient rather than new one Pass key names to changeuid
20180917	Take 0x9999,0x1234 as anomymized ID
20181110	Change directory separator for Linux to /, apply BaseDir and assert(open)
20200202	Allow . in stage\
20201021	Consider removing 0040,2017 = FillerOrderNumberImagingServiceRequest
20210118	Added newname option for inholland system; remove FillerOrderNumberImagingServiceRequest
20210204	Small fix in that
20210208	Fix 3 parameter mode; newname overrules patientname anonymisation
20210209	Use newname parameter before anonymisation
20210211	If using single parameter, make sure patid and patname are different
20210211	Make sure patid and patname are different before anonymisation
20230920	Accept #xxx as stage; log stage
20230924	Add optional configuration file; TagsToKeep (reverse logic); documentation; configure log level; allow hiding any Name tag from log
20230925	fix typos and changed order
20230928	Fixed reading empty newid, configuration file, added newlines to output
20231018	No reset dicom object in TagsToKeep - use temporary file; reset reversible after cfg read
20231021	Now use newly added Data:Reset
20231107	Also accept (hex) group numbers in lists instead of name
20231122	Keep TagsToEmpty and TagsToRemove to combine (after) TagsToKeep
20250214	Catch missing command_line (when direcly called as lua file)
20250911	Fix missing newuids if logmodified==false
20250911	Split functions of and pass all config and control as parameters
20250911	Added dateoffset to command_line or tag "9999,1235"
20260107	Moved reading of alternative configuration to here
20260109	Added TagsToSanitise
20260110	Made config local
20260913	Fix passing of patient ID and name from command line

anonymizer.lua (anonymizer functions)

20250911	Split functions of and pass all config and control as parameters
20250911	Added dateoffset to anonymizer; write anonymization profile sequence; config is not optional
20260107	Moved reading of alternative configuration to wrapper
20260109	Added TagsToSanitise, version to 1.5
20260114	Also remove dates as dd-mm-yyyy, yyyy-mm-dd, dd/mm/yyyy, yyyy/mm/dd
20260119	Escaped - in dd-mm-yyyy, yyyy-mm-dd sanitiser
20260806	Allow element by group and number, but only in TagsToKeep, e.g. "ffff" vs "ffffcafe"

20260913	Missing end in processing group

deanonymize_script.lua (reverse anonymize)

20130125	Created
20130211	Take out invalid characters for filenames
20130522	Cleanup for release
20130718	Moved log folder
20130802	Detect if patientID cannot be deanonymized
20140309	Protect against any missing data
20160113	Added staged operation using "stage" command_line
20200127	Allow stage *: pick stage based on actual patientID; reject on error
20200202	* in command line sets 9999,9000 with orginal patient ID
20200302	Fix DirSep for linux, add Global.basedir
20200308	Used wrong quotes in stage * code; postgresql tripped over it case of UIDMODS; mariadb tripped over it
20201003	Fix crash when trying to deanonymize birthdate, name and sex if not there
20210209	Also store name in 9999,9001
20210218	Accept StudyInstanceUID as secondary source for stage *

association.lua: support script for server-side scripting

20200125	created to support multithreaded move initiated by script
20240404	fix single line comments in read_amap

print.lua: initial attempt for Linux printer

20210820	GUI independent printer code

FixRTDicom.lua: repairs broken links in RT objects

20120817	Created
20210422:	fix for Varian, use '' in dbase access; attaches to MIP
20220321:	allow CT to be in different study (assumes on CT per patient ID)
20220322:	search UIDs on slice location to ensure correct order
20240311:	breaking the assumption of the patient id being the same for rtstruct!

listimages.lua: part of app/newweb interface

20160723	changed incorrect dum heading for image url
20170305	start with send etc functions (1.4.19)
20180203	Removed opacity control for s[1] which does not exist
20181215	Added remotequery to limit dependency on cgi functionality
20181230	Removed dicomquery, only kept remotequery
20190112	Use | to separate items to help with special characters in patientID
20200127	List ImageID instead of PatientName; fix sort if no InstanceNumber
20200307	Avoid query with '***'
20201025	Standardised header

20230625 Made all links relative
20240928 Added #UID hash with full UID tooltip
20260815 Use rquote throughout
20260902 Modify dropdown menu based on checkaccess
20260904 checkaccess is run remotely

listimageswiththumbs.lua (part of the web interface)

20151206 fix 1.4.17d compatibility
20160709 fix for PatientID with spaces in it
20160723 changed incorrect dum heading for image url
20181215 Added remotequery to limit dependency on cgi functionality
20181230 Removed dicomquery, only kept remotequery
20200127 List ImageID instead of PatientName; fix sort if no InstanceNumber
20200307 Avoid query with '***'
20201025 Standardised header
20220827 Made dgate extension more generic, allows deployment as app
20230625 Made all links relative
20240928 Added #UID hash with full UID tooltip
20260815 Use rquote throughout

listseries.lua (part of the web interface)

20151206 1.4.17d compatibility
20160709 fix for PatientID with spaces in it
20160717 Added experimental renderseries
20160830 Removed that again
20170305 start with send etc functions (1.4.19a)
20170430 Indicate viewer in menu
20180203 Removed opacity control for s[1] which does not exist
20181215 Added remotequery to limit dependency on cgi functionality
20181230 Removed dicomquery, only kept remotequery
20190112 Use | to separate items to help with special characters in patientID
20200307 Avoid query with '***'
20201025 Standardised header
20220827 Made dgate extension more generic, allows deployment as app
20220830 Add serieslink to add e.g. wadoseriesviewer
20230625 Made all links relative; enable default viewer link
20240928 Added #UID hash with full UID tooltip
20260815 Use rquote throughout
20260902 Modify dropdown menu based on checkaccess
20260904 checkaccess is run remotely

liststudies.lua (part of web interface)

20151206: fix 1.4.17d compatibility
20160709 fix for PatientID with spaces in it
20170305 start with send etc functions (1.4.19a)
20170430 Indicate viewer in menu
20180203 Removed opacity control for s[1] which does not exist
20181215 Added remotequery to depend less on web cgi functionality
20181230 Removed dicomquery, only kept remotequery

20190112	Use | to separate items to help with special characters in patientID
20200307	Avoid query with '***'
20201025	Standardised header
20220827	Made dgate extension more generic, allows deployment as app
20220830	Add studylink to add e.g. ohif (example commented out)
20220905	Fix display of ModalitiesInStudy
20230625	Made all links relative; enable default ohif link
20240928	Added #UID hash with full UID tooltip
20260815	Use rquote throughout
20260902	Modify dropdown menu based on checkaccess
20260904	checkaccess is run remotely

listpatients.lua (part of web interface)

20151206:	fix 1.4.17d compatibility
20160709	fix for PatientID with spaces in it
20170305	start with send etc functions (1.4.19)
20170306	Implement delete, send, anonymize and changeid; no progress yet
20170307	More work on commands; zipper requires dgate source code change
20170430	Zipper applied cgibinary mode in 1.4.19a; viewers work in separate windows
20180203	Adapt zipper for Ladle mode (if write); removed zip.cq call
20180203	Try popup window for series and study viewer; provide filename for zippers
20181124	Added readOnly (no modify/delete) and viewOnly (no download) flags, pass compress to viewers
20181215	Added remotequery and remote get_amap to depend less on web cgi functionality
20181230	Removed dicomquery, only kept remotequery
20190112	Use | to separate items to help with special characters in patientID
20200112	Added optional stage to zipanonymized
20200113	Small fix in that
20200307	Avoid query with '***'
20200618	Fixed hardcoded CONQUESTSRV1 in 'deleter'
20220827	Made dgate extension more generic, allows deployment as app
20220830	Fix proposed patientID; included uids after |
20230625	Made all links relative
20260815	Use rquote throughout
20260823	Use rquote also for luastart: code
20260902	Use checkaccess to control access to server control channel and dropdown
20260904	checkaccess is run remotely
20260909	Block comma's in parameters to avoid escaping into other command parts
20260913	Fixes in string passing for change patient ID and anonymize

listtrialpatients.lua (part of web interface)

20160124:	Created
20220827	Made dgate extension more generic, allows deployment as app

20230625	Made all links relative
20260815	Use rquote throughout
20261026	Reject call to dbquery with ; in arguments
20261104	block " escape; syntax errors (Marek Figielski, vanilla pl)

listtrials.lua (part of web interface)

20160124:	created
20200112:	Skip (empty) as possible trial name, count all others
20220827	Made dgate extension more generic, allows deployment as app
20230625	Made all links relative
20260815	Use rquote throughout
20261026	Reject call to dbquery with ; in arguments
20261104	block " escape (Marek Figielski, vanilla pl)

wadoseriesviewer.lua (plugin viewer for web interface)

20120302	Created
20151015	WIP mouse wheel and more interface
20151018	Cleanup, added default level and window; added error handling
20151018	Note: print has a hardcoded limit at 2000 chars, avoid really long strings!
20151019	Added keyboard interface
20151020	Zoom and pan working
20151021	Cleanup zoom and pan; show level/zoom etc info in table, frame control
20151023	Some fixes, introduce slicer(0) and use xxxer functions to display info
20151024	make zoom..frame labels mousewheel active and highlighting, layout, help
20151024	Added hints; click labels to set numerical value; added autosave function; Note: uses cookie with seriesuid and wadoseriesviewer_autosave
20151025	Unified js code with wadostudyviewer; note loadseries() not used
20151027	Use series2 to enable processing of special characters
20151027	Firefox compat
20151206	fix 1.4.17d compatibility
20160319	Small fix in slope default
20160717	Fix in level and window intercept; use central slice to get info
20170305	Added hint to save, fix zoom
20170430	Zoom no longer checks on version; assumes 1.4.19 plus
20180204	Removed 'getting image' print
20181128	Added anonymizer also to series viewer
20181223	Use remotequery (1.4.19d)
20180112	Fix to allow : in patientID
20220830	Renamed dropdown to slicelister; sync its position with slice Disable altrows; no table!
20220921	Added slice=num parameter; click on image shows x and y position
20220921	x=num and y=num parameters to show annotation
20221012	Added storeclick call on clicking
20221017	Only call storeclick when startslice is passed
20230625	Made all links relative

20240330	If not WindowCenter or WindowWidth; use BitsStored to get them, with a default of 11 bits
20240331	Merged
20240401	restored check for empty WindowCenter and WindowWidth
20260815	Use rquote throughout
20260824	rquote does not require double quoting

wadostudyviewer.lua (plugin viewer for web interface)

20151026	Created; based on nh_queryseries for table colors etc
20151027	Firefox compat
20151206	fix 1.4.17d compatibility
20160124	Added anonymize option; passed to all WADO text display and heading of table
20160319	Small fix in slope default
20160717	Fix in level and window intercept; use central slice to get info
20170305	Added hint to save, fix zoom
20170430	Zoom no longer checks on version; assumes 1.4.19 plus
20180204	Removed 'getting image' print
20181223	Use remotequery (1.4.19d)
20180112	Fix to allow : in patientID
20200113	Allow 0 records
20220830	Renamed dropdown to slicelister; sync its position with slice
20230625	Made all links relative
20240330	If not WindowCenter or WindowWidth; use BitsStored to get them, with a default of 11 bits
20240331	Merged
20240401	restored check for empty WindowCenter and WindowWidth
20260815	Use rquote throughout
20260824	rquote does not require double quoting

wadoviewerhelp.lua (part of plugin viewer for web interface)

20171011:	for 1.4.19b
20180113:	Fixed minor inconsistencies; added frame help

iframe_starter.lua (plugin study viewer alternative for wadostudyviewer)

20181130	Created from wadostudyviewer.lua
20181227	Use remotequery to limit contralize access to server
20180112	Fix to allow : in patientID
20230625	Made all links relative

dwviewer_starter.lua (plugin study viewer alternative for wadostudyviewer)

20181124	Created by backporting ivmartel's script,
20181213	server_name does not copy port; use relative link instead
20181227	Use remotequery to limit contralize access to server
20180112	Fix to allow : in patientID
20230625	Made all links relative

papaya_starter.lua (plugin study viewer alternative for wadostudyviewer)

20181126	Created
20181213	server_name does not copy port; use relative link instead
20181227	Use remotequery to limit contralize access to server
20180112	Fix to allow : in patientID
20230625	Made all links relative

slice.lua (drop in replacement for dgate built-in 'slice' mode for pure lua webservers)

20180124	
20180202	delete output file and gracefully fail if not created
20180203	Added local to f

WADO.lua (drop in replacement for dgate built-in 'wado' mode for pure lua webservers)

20180130	
20180131	some more protection against missing elements
20180202	delete output file and gracefully fail if not created
20180203	Added local to f
20181111	Use wadorequest for all images to fix zoom error and for convenience
20260909	Block comma's in parameters to avoid escaping into other command parts

start.lua (top of CGI web interface)

20151206	fix 1.4.17d compatibility
20160124	added anonymizer trial viewer; enabled after any named anonymizing
20160709	fix error message if AE not in acrnema.map
20170211	Protect counttrials against missing UIDmods table
20180204	Some cleanup, report when ladle is used
20181111	Added missing Global.WebCodeBase for conquest icon
20181230	Removed no longer needed acrnema.map test, all access is remote
20191017	Added submit button to upload file
20200113	Skip '(empty)' and '' as trial name count all others in counttrials
20200115	Added dbquery
20200117	Added dbqueryluaformat, dicomquery, dicomqueryluaformat
20200119	dicomquery returns json if dgate supports Serialize(true)
20200125	Added dicommove
20200126	Added sql and servercommand; but disable when readOnly set
20200214	Removes os. call for ladle
20200301	Added swupdate command; note requires 777 access /home/tmp in linux
20200302	Other test for linux, use os.getenv('SCRIPT_FILENAME'); directly copy to web
20200303	Added serverpage command: writes without header; uploadsql
20200305	Added project parameter to swupdate; added dbquerysqldownload
20200307	Use tempdir from dicom.ini

20200308	Note: NEVER use tempfile call unless in dicom server!, Fixed dbquerysqldownload Fix UIDMODS case
20200310	Split uploadsql query into lines and then execute - for mysql compatibility
20200407	Added images target to updater
20200505	Added uploadtable command
20200514	Adjusted uploadtable for linux; backup old versions
20200914	Added downloadtable, requires JSON and csv : first time upload of images gives error in line 188
20200920	Downloadtable support .csv and .json files
20200921	Made upload backup switchable; avoid flickering mkdir if possible
20200922	Added uploadinfo; note uploadtable cannot handle big files
20200925	Fix updater
20201003	Added uploadfile, uploads single file and runs any script; removed countcases
20201004	tidied swupdate; pass inholland always as 'project' use Script(mkdir to avoid popups); removed use of c:\temp
20201012	Added zip and zipanonymized to reduce footprint of inholland project
20201024	Support _passfile_ to enable upload from php script; separate cgi-bin copy for web and dicom server
20201109:	Use single command for uploadsql
20210204:	Pass CGI('newname') to anonymize_script in zipanonymized
20210208:	Fixed that
20220329:	Upload now uses start/uploadfile command (works through php interface)
20220823:	Added upload() function that communicates with server with a dicomecho
20220824:	Hopefully finished upload stuff
20220827:	Made dgate extension more generic, allows deployment as app; No longer accept cgi port and address, fix unused default in remotemove function
20220827:	Escape \ to \\ in returned filename of upload; fix uploading even and odd data
20220828:	Use global port and address, can come from command line
20220830:	Popup and 'progress' bar for upload
20220831:	Avoid overflow - don't use print() in downloadtable
20221012:	storeclick stores link in clicks.txt
20230605:	readOnly disables upload methods and post
20230625:	Made all links relative
20260815:	Use rquote throughout
20260902:	Use checkaccess to control access to server control channel
20260904:	checkaccess is run remotely
20260909:	Block comma's in parameters to avoid escaping into other command parts; give uploadfile script access
20261026:	Reject call to dbquery with ; in arguments

installer.lua (mimimal installer on Linux)

20230903	creation
20230909	extended to fairly complete installer
20230909	fixed passing port to dicom.ini; fixed web install
20230910	databases, verbose mode, command line options

20230911	Fix editfile, update help
20230911	Fix mariadb package mariadb-server
20230916	Changed input order for linker for older gcc; add /usr/sbin to apache command paths
20230919	Fixed dbaseiii config; added null database
20230920	Small reconfigure of above; -r recompiles without asking
20250415	Irrelevant typos in defaults for updating compression
20250911	Fallback for failed jpeg-c ./configure on debian 13
20260701	Fix luasocket compile; added luabuiltin
20260702	luabuiltin skips lua check; allow httpd as apache2 alternative
20260702	Added 'sudo chcon -R -t bin_t' for SELinux
20260702	Compatible with newer lua versions; Added -w #; -p #, -s name, -y, -r y/n, -z pw
20260703	Note: does not require unzip; update rocky doc for postgresql
20260707	Remove unzip
20260812	Added LadlePort and BackupSchedule; ladle is called as require([[ladle]])()
20260920	Avoid copy servertask before folder exists, pass ladle port to startup line and web; Show IP filter info in dicom.ini; update keeping config and data; Remove unneeded association line; use package 7zip and link 7za to 7zz; Fix backupschedule line
20260920	Added -y flag to update step

dgate.php (proxy web interface; allows lua files to remain of server)

20201021	emulated dgate CGI application with example login system
20201023	Added SCRIPT_FILENAME variable
20201024	Working on passing POST (problem: popen does not work in binary mode, now translate to equivalent GET)
20201025	Make sure variables in called lua code are define local and do not clash with globals
202001025	Fixed SCRIPT_NAME
202001029	Added PUT, zip, delete temp file
202001030	Protect unlink with file_exist
20201102	Copy paste error, date formats; note use ./dgate for linux Note uploading does not work under Linux because /tmp is not global....
20201116	Disable redirect when not using userlogin
20201116	Note: putenv not thread safe - requests are mixed; propose to create dgate -xquerystring
20201116	Added newcgi flag; if set use -y mode to pass QUERY_STRING (1.5.0c up)
20210117	Added missing ; on newcgi if
20210516	Use smaller substring for header handling; note use PHP7 for fast passthru
20210913	Put wordpress login test here as option
20220823	Added optional CORS headers
20220827	Use configuration, stopped supporting old cgi interface
20260903	Pass REMOTE_ADDR; use squote (not escapeshellarg)
20261117	escapeshellarg for Linux

singlefilelogin.php (@link https://github.com/panique/php-login-one-file/) (example login script for validating CGI web interface, using dgate.php)

20201021	showPageLoggedIn shows no information, allows integration in other pages
20201021	Do not allow registration in showPageLoginForm -> moved to app for user admin
20201021	Create user.db if it does not exist, using ini string to set admin_password
20201021	Layout registerform with table
20201025	Added sqlite note, allow empty $ini, ini can define users admin, student, teacher and moodle
20211209	Pass 'name' parameter through to after login

rquery.lua **Part of api/dicom**

20220911	made compatible with Ladle web server
20220919	only provide rquery; used for all queries;
20221017	added remotemove, remotezip, remotemodalities
20230808	added \r\n before boundary - missed by weasis loader
20250326	fix on iowrite getting NUL by SM1312
20250701	div re-added \r\n before boundary
20260810	Added Divinus streaming helper functions getinstancelist and emitinstances
20260812	Divinus version using concat, note use of multiple uid matching:
20260813	Divinus; use iowrite in emitinstances; mvh; use 'un' compression
20260815	Use rquote throughout

posters.lua **Part of api/dicom**

20230620	fix for linux (/ vs \)
20250405	Catch null return from servercommand
20260815	Use rquote throughout

qido.php

20260901:	Use escapeshellarg
20260903:	Use squote, functions in index.php

posters.php

20260903:	Use squote instead of escapeshellarg

wado.php

20220814	Simple and fast WADO server using conquest1.5.0c wadoparse command and servertask
20260904:	Use squote instead of escapeshellarg

index.php

20260903:	Use squote instead of escapeshellarg; implemented checkaccess
20260904:	checkaccess is run remotely

20260909:	script access control also blocks any scripts passed to commands
20261104:	escapeshellarg for Linux; wado access controls DicomWeb read (Marek Figielski, vanilla pl)

Router.php