



Nexus Release Notes

Version 3.08.00

Pukka-j Limited

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1 Introduction

This release introduces some new features for the main Nexus application and has extended the functionality of some features from the previous release.

The updates and installers are now shipping with the latest Eclipse Temurin OpenJDK (Java 17) bundle. The target runtime remains Java 8 for backwards compatibility.

2 New Features

2.1 DICOMweb - STOW-RS and QIDO-RS

A new output node has been added to allow Nexus to convert a DIMSE C-STORE to a DICOMweb STOW-RS and a C-FIND to a QIDO-RS request. WADO-RS is expected in a future release.

2.2 SIU Order Handling

SIU messages now create bookings in the system.

3 Improvements

3.1 DICOM Associations

The way the code handles associations has been changed internally. Previously, the association class extended a Map object. The class now uses an instance of a Map internally and no longer extends it. Functionality remains the same, there was no need to extend Map.

3.2 HTTP MIME Type Encapsulation

New helper classes have been added to better encapsulate HTTP constants.

3.3 Compression Support

Better support has been added for JPEG compression. The ImageFactory has been updated to look for JPEG 2000 support from the `com.github.jaiimageio.jpeg2000` library. This system will also look for other registered codecs (e.g., legacy CLib wrappers). It will also check for dcm4che libraries for some JPEG transfer syntaxes where relevant to maintain lossless compression.

3.4 DICOM Redaction Node

In order to use the DICOM Redaction node with compressed data, it was necessary to put a DICOM decompressor in front of it in a pipeline and would also result in the output being decompressed. The node has been updated to accept compressed data and handle the decompression internally. After redaction, the output redacted frames are recompressed back to the original compression syntax. This means only a single node is required for handling the redaction of compressed data and also produces much smaller outputs.

3.5 Refactored JSON Factory

The JsonFactory class has been moved into a new json package for better segregation.

3.6 Jar Version Reading from Manifest

The code for reading application versions from manifest files has been improved for better support for external libraries. The primary version key is now "Implementation-Version" rather than "Specification-Version". A fallback for "Bundle-Version" is used. The `artifactId` is now read from a `pop.properties` file where Maven details are available (when present).

3.7 Dependency Handling

The build process now ships dependencies named with their `artifactId` and version.

3.8 Version Packaging

The build process now adds the build ID to the version for any non-release builds. A POM is now added to the manifest to be consistent with Maven builds.

3.9 Prior Selection Matching

- Load defaults first, then override with the custom file.

- Faster lookups.
- Improved matching by collapsing repeated and mixed whitespace in descriptions.
- Option to create a custom prior limit per modality.
- Improved study-time check to ensure a prior predates the primary study.

3.10 Scheduled Query Type

Added new query type (SCHEDULED) for querying orders that should appear on the diary.

3.11 RIS Related Handlers

Separated out DICOM document processing and storing so that it's generalised and can be used by all of our services to ensure that RIS documents are stored consistently throughout our services. Added new Patient Handling to be responsible for patient related management through the RIS.

3.12 Referral Portal Integration

Integrated our external library, the Referral Portal into Nexus. Updated all queries to use our SQLQueryFactory instead of its own separate factory.

3.13 Series Transfer

Updated the Nexus PACS Manager and Image transfer to transfer at series level as well as study level.

3.14 System Nexus Removal

Removed the PACS JAR and the deprecated 'System' Nexus tab. Removed the pacs-listener from our services and instead used the specific handlers in place of the pacs-listener that required the "System" Nexus. Clean-up of files by removing all related classes and javascript that were only used by the "System" Nexus.

3.15 Workflow Manager Import Job Menu

Updated so all options are available for utilisation of the DICOM Import jobs within the Workflow Manager.

3.16 Plugins

The redactor, anonymiser and broker all now form part of the Nexus build and are no longer packaged separately.

3.17 Status Handling

An overhaul of the status handling has been performed to make the server side status handling on individual nodes more efficient.

3.18 Grouped Switches

It is now possible to define a group of switches that can be toggled etc., as a group.

3.19 Base64 Encoding

The process for encoding and decoding Base64 was standardised throughout the codebase to use the Java `Base64.getDecoder()` method.

3.20 Exception Handling JPEG Encoding

Improved the exception handling when trying to set the JPEG encoding to be lossless.

3.21 RPA Parameters

The RPA service has been updated to allow users to specify custom URL parameters and define fixed values for them.

3.22 Anonymiser Lenient Mode

The anonymisation node has a new option on the trial configuration to set the patient look-up matching to either strict (default) or lenient. In strict mode, all the demographics for a given patient ID must match between the anonymisation record and the arriving data, i.e., the name, date of birth, and sex list against and ID in the database must be the same as the DICOM file being anonymised otherwise, a new record is created. In lenient mode, so long as the IDs match, the inbound DICOM will be anonymised with the details defined in the anonymisation record. If more than one entry for the patient ID is added to the anonymisation record, in lenient mode, the first anonymisation record will be used to anonymise the data.

3.23 Origin Updater

The package downloader used by the update service has been updated to handle updating the system using the new update exe packages.

3.24 Pipeline Status

When a file reader pipeline is in continuous mode, there may be periods of time where there is nothing to process. The status of the pipeline is now set to "MONITORING" to indicate when there are no files to process but the pipeline is still running and checking for new files.

4 Bug Fixes

4.1 Lite Viewer JPEG Compressed Cardiac US Display

Issue: When viewing multi-frame ultrasound, it was possible for the Lite Viewer to fail to correctly display compressed frames.

Resolution: Updated the detection and handling of compressed frames on both the server side and client side.

4.2 Micron Symbol in DICOM Dictionary

Issue: The DICOM dictionary used for loading tag descriptions was saved with a ? symbol instead of the μ symbol in a few places.

Resolution: Updated the dictionary with the correct symbol for UI display in the anonymiser.

4.3 Pipeline Duplication

Issue: It was possible in certain circumstances that applying an individual pipeline configuration could result in that pipeline being duplicated in the network configuration.

Resolution: The applied pipeline configuration logic for applying and replacing pipes has been updated to prevent this from happening.

4.4 Anonymiser Configuration

Issue: It was possible in certain circumstances that the anonymisation configuration was not handled on the server.

Resolution: The configuration parsing has been updated to account for the new general node configuration details like the node name.

Issue: 0 was initially added as the value for new tags in the tag anonymisation configuration page.

Resolution: The configuration now correctly sets it as "Remove Tag" rather than the value index.

Issue: Tags with a Unicode character in the description could cause an issue saving the configuration.

Resolution: The configuration now correctly handles the Unicode in the description.

4.5 Log Manager

Issue: In OpenJDK, weak references are now held for named loggers. If a logger isn't held by a strong reference, it can be GC'd and any configuration applied to it is lost.

Resolution: The references to the named loggers in the LogManager are now held as strong references.

4.6 JPEG 2000 Support in Lite Viewer

Issue: When reading the image data from files for the DICOM Lite Viewer, if the image was JPEG 2000, it would not display. There is no built in browser support for that syntax.

Resolution: The server side code now decodes JPEG 2000 before sending to the client (if there is a codec on the server).

4.7 Dicom Explorer "ncase" CGET compatibility

Issue: When handling series- and study-level CGET requests from the Dicom Explorer ncase library, there was an issue responding to the proprietary version of the CGET protocol used by ncase. The issue was partly because ncase and Nexus share a base DICOM identifier and try to use this protocol.

Resolution: The DICOM handler on the Nexus service has been updated to enforce using the CGET protocol as per the standard rather than the Pukka-j modified version of the protocol.

5 Known Issues

None

6 Comments

This release has seen some changes to the way the libraries are built and deployed.

The library manifest now includes a POM to make the libraries consistent with Maven builds.

Some of the details in the manifest have been updated to standardise the values in there.

A new software signing certificate has been applied to the process.

The way dependencies are handled and deployed has been updated and now keeps the version numbers on the libraries. Most of the Nexus libraries now also include the version number on the jar files.

7 Installation Instructions

Before making any changes, the **docs** and **lib** folders in the install directory should be backed up along with the **nexus.jar** in the install root.

Because of the change to keep version numbers on the jar files, a manual update process should replace the lib folder in the install directory rather than just dropping the files from update into the lib folder because the new versions will no longer overwrite the old versions as they will have a different filename.

For Windows users, there is a new updater executable for each release, which can be run on the server being updated and will perform the update process. There is an option in the updater to also include updating the Java runtime as part of the update process. The latest Java 17 runtime has started shipping in the updater package. See the Service Updater Guide for more details.

Required libraries

Artefact	Version
nexus.jar	3.08.00
pjk.jar	1.22.00
pacsology.jar	1.27.00
mint.jar	1.30.00

Optional libraries

Artefact	Version
service-updater.jar	1.04.00
kakadu.jar	1.05.00

UI assets

- `cloe.js.gz`
- `pjwc.js.gz`
- `pj.css`
- `pjwc.css`