

ARCHIVED PATIENT EXPORTER

Version 1.1.0

User's Manual

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Table of Contents

1. Introduction	3
1.1 How It Works	3
1.2 Exported Data Organization	3
1.3 Exported Data Types.....	4
1.4 Key Features	4
2. Supported Archives and Limitations	5
2.1 Supported Archives	5
2.2 Archives That Cannot Be Exported	5
2.3 Plan Selection	5
3. System Requirements	5
4. Installation	6
5. Locating Patient Archives	6
6. Exporting Archived Patients	7
6.1 Launching the Application	7
6.2 Scanning and Selecting Archives.....	7
6.3 Selecting Items to Export	8
6.4 Configuring Export Options	9
6.5 Running and Monitoring the Export.....	9
6.6 Export Log and Verification	10
6.7 Database Records.....	11
6.8 Additional Features	11
7. Workflow Overview	12
8. Troubleshooting.....	12
9. Disclaimer	13

1. Introduction

The Archived Patient Exporter (`Export_Archived.exe`) is a Windows application that converts archived CDMS and IDMS patient records into an organized directory tree of DICOM series, RT objects, treatment files, plan files and PDF attachments. The result has the same structure the Patient DICOM Exporter produces for active patients, so archived patients can be reviewed with standard DICOM tools or sent to a PACS or MIM system without first being restored onto the CDMS or IDMS system.

1.1 How It Works

Each archived patient is stored in its own archive folder. The folder holds every patient file under a system-generated name, together with the information needed to put the files back in order:

- **Archived files** (*.cdms) – one file per patient file, named by its file token rather than its original name.
- **PatientRecordManifestBO.xml** – the list of archived files with their original names, sizes and checksums.
- **CDMS*.tmp** – the patient's database records (series, plans, fractions, documents and more), stored inside the archive.

The program reads the database records stored in the archive to work out which series, plan, fraction or document each file belongs to. It then copies the file under its original name into the matching folder and checks it against the checksum recorded in the archive. The archive is only read, never changed, and no connection to a CDMS or IDMS database is needed.

1.2 Exported Data Organization

Patient data is exported to a hierarchical directory structure on disk, organized by last name, first name and medical ID. The following illustrates the patient-level directory structure:

```

Patient Directory (LastName_FirstName_MedicalID)
├── DICOM\
│   ├── <modality>\<series UID>\      (patient image series: CT, MR, PET)
│   └── MVCT\<series UID>\          (TomoTherapy/Radixact MVCT scans)
├── Plan Directory\
│   ├── Beam_files\                (CyberKnife beam images)
│   ├── Deliverable_files\        (TT/RX delivery plans and reports)
│   ├── DICOM\
│   │   ├── Plan_RTSTRUCT-DOSE\    (plan RT structure sets and doses)
│   │   └── <modality>\<series UID>\ (TT/RX deliverable context)
│   ├── Documents\                (scanned PDF documents)
│   ├── DRR\                      (CyberKnife DRR images)
│   ├── Fraction\<n>\             (one folder per fraction; see below)
│   └── Plan_files\                (plan files and XML)
├── Other\<table name>\            (files linked only by other tables)
├── Unclassified\                  (files no table references)
└── _Database\                     (archive tables as CSV files)

```

Every treatment fraction has its own folder, because each fraction saves its files under the same names:

Fraction\ <n>\< th=""><th>(a makeup delivery: <n>_makeup<m>)</th></n>\<>	(a makeup delivery: <n>_makeup<m>)
— Fraction_Files\	(CyberKnife fraction files)
— Live_Images\	(CyberKnife live x-ray images)
— Logs\	(CyberKnife treatment logs)
— Screenshots\	(CyberKnife delivery screenshots)
— Density_Model\	(TT/RX MVCT density models)
— Registration\	(TT/RX MVCT registrations and isocenters)
— detector data	(TT/RX fraction fulfillment files)

Note: If two different files would end up with the same name in the same folder, the second one is saved as “name (2)” and the change is recorded in the export log. Two plans with the same name get separate folders: “Plan” and “Plan (2)”.

1.3 Exported Data Types

The following data is exported from each archive:

- **All patient DICOM series** (CT, MRI, PET, and TomoTherapy/Radixact MVCT scans)
- **For every plan in the archive** (or, with the plan filter, only the plans the Patient DICOM Exporter would export):
 - Plan RT structure sets, doses, plans and records
 - TT/RX deliverable context: planning CT, RT plan, dose, structure set and RT records, plus delivery plans, sinogram and reports
 - Treatment fraction files: screenshots, live x-ray images, logs and fraction files (CyberKnife)
 - Fraction fulfillment data: detector data, MVCT registrations, isocenters and density models (TT/RX)
 - Treatment planning files, beam images and DRR images
 - PDF files attached to the patient record
- **The archive's database records** – every table, saved as a CSV file, with copies of the archive manifest, audit trail and archive ID
- **Any remaining files** – files the database records link only from other tables, or not at all, so that the export always contains every archived file

Note: Accuray CyberKnife RTPLAN is a skeleton RTPLAN primarily used for OIS interface and scheduling. It contains patient demographic and treatment plan information (e.g., plan name, number of fractions, dose per fraction, LINAC energy level), but does not contain geometric or dosimetric data such as beam angles or collimator openings. For Radixact/TomoTherapy plans, the RTPLAN contains the complete set of delivery instructions, including MLC leaf movements.

1.4 Key Features

- **No restore required** – archived patients are converted directly from their archive folders. The CDMS or IDMS database is not used, and the program can run on any Windows computer that can read the archives.
- **Same folder layout** – with the Plan filter checked, the export matches what the Patient DICOM Exporter (version 1.3.0 or later) produces for the same patient, folder for folder and file for file. Only the Other, Unclassified and _Database folders, which hold archive-only content, have no counterpart there.
- **Every file accounted for** – after each patient, a summary compares the number of files in the archive with the number copied, skipped, excluded, missing and failed.

- **Integrity verification** – every copied file is checked against the checksum recorded in the archive: CDMS CRC, MD5, or SHA-512 for IDMS 3.5 archives.
- **Batch conversion** – scan a whole storage location, pick the archives to convert, and copy files several at a time (up to four parallel copy streams).
- **Safe re-runs** – files that already exist are skipped unless you choose to overwrite them, and an interrupted copy never leaves a partially copied file behind.
- **Optional DICOM push** – send each exported patient to a PACS or other DICOM server after the export.

2. Supported Archives and Limitations

2.1 Supported Archives

- Unencrypted CyberKnife and TomoTherapy/Radixact patient archives created by CDMS or IDMS, including IDMS 3.5 archives that record SHA-512 checksums.
- Archives on a local disk, a USB drive or a network share.
- Older archives that store each file under its full file token are recognized automatically.

2.2 Archives That Cannot Be Exported

The scan lists these archives with an explanation in the Status column, and they cannot be selected:

Status	Meaning
Encrypted - not supported	The archive is encrypted. Restore the patient onto the CDMS or IDMS system and use the Patient DICOM Exporter instead.
No CDMS*.tmp table file	The archive folder has no database records, so files cannot be organized. The archive is incomplete.
No patient record	The database records do not include the patient record.
Unreadable: <reason>	The database records could not be read, for example because the file is damaged or access is denied.

2.3 Plan Selection

By default, every plan in the archive is exported. This differs from the Patient DICOM Exporter, which skips some plan types. Check **Plan filter** under Options to apply the same rules as the Patient DICOM Exporter. Only plans with one of the following statuses are then exported: Deliverable, Authorized, Disallowed, Under Treatment, Discontinued or Completed. Setup and alignment plans are skipped. Scanned documents follow the Patient DICOM Exporter's wider rule and are kept for any plan status.

3. System Requirements

Before installing or running the Archived Patient Exporter, confirm that the following requirements are met:

- A Windows computer or server with Microsoft .NET Framework 4.0 or later. Windows 8, Windows Server 2012 and later already include a compatible version.
- Read access to the storage location that holds the patient archives.

- An output location (internal disk, external USB drive or network share) with free space roughly equal to the size of the archives being exported.
- No connection to the CDMS or IDMS database is required.

Additional Constraints

- Encrypted archives are not supported.
- To push DICOM to a third-party DICOM server after the export, the computer needs the provided `send_dicom.bat` file and network access to the DICOM server.

4. Installation

Follow the steps below to install the Archived Patient Exporter:

1. Copy the `Export_Archived` folder from the installation package (for example, `Export_Archived.zip`) to `C:\` or a directory of your choice. Keep `Export_Archived.exe` and `Export_Archived.exe.config` together in the same folder.
2. Right-click `Export_Archived.exe` → **Send to** → **Desktop (create shortcut)** to create a shortcut on the desktop.
3. To push DICOM after an export, copy `send_dicom.bat` to `C:\cdms`. To keep it somewhere else, open `Export_Archived.exe.config` in Notepad and change the `SendDicomCommand` value to its full path:

```
<add key="SendDicomCommand" value="c:\cdms\send_dicom.bat" />
```

If the computer does not have .NET Framework 4.0 or later (for example, Windows Server 2003), install `dotNetFx40_Full_x86_x64.exe` first.

5. Locating Patient Archives

Patient archives are kept in the storage locations configured on the CDMS or IDMS system. To find a storage location's folder:

1. Log into the Multiplan or Precision workstation.
2. From the main menu, launch the **System Administration** application and select the **Storage** tab.
3. The **Location Path** column shows the folder or network path of each storage location.

Each archived patient is a folder named after its archive ID, for example `67eed42d-a6f6-411a-ba6d-35ab0848f1c1`. It contains the archived `*.cdms` files, `PatientRecordManifestBO.xml`, `PatientAuditTrailList.xml`, `ArchiveId.txt` and a `CDMS-...-FMT.tmp` file.

- Point the program at a storage location to list every archive in it, or at a single archive folder.
- For a network share, enter its UNC path (for example, `\\server\share\StorageVault`) or map it to a drive letter first. The Windows account running the program needs read access to the share.
- The program only reads the archives. It never changes, moves or deletes anything in them.

6. Exporting Archived Patients

6.1 Launching the Application

1. Log into the computer that will run the export.
2. Double-click the Export_Archived shortcut, or Export_Archived.exe in its installation folder.
3. The main window opens. Figure 1 shows it after a storage location has been scanned:

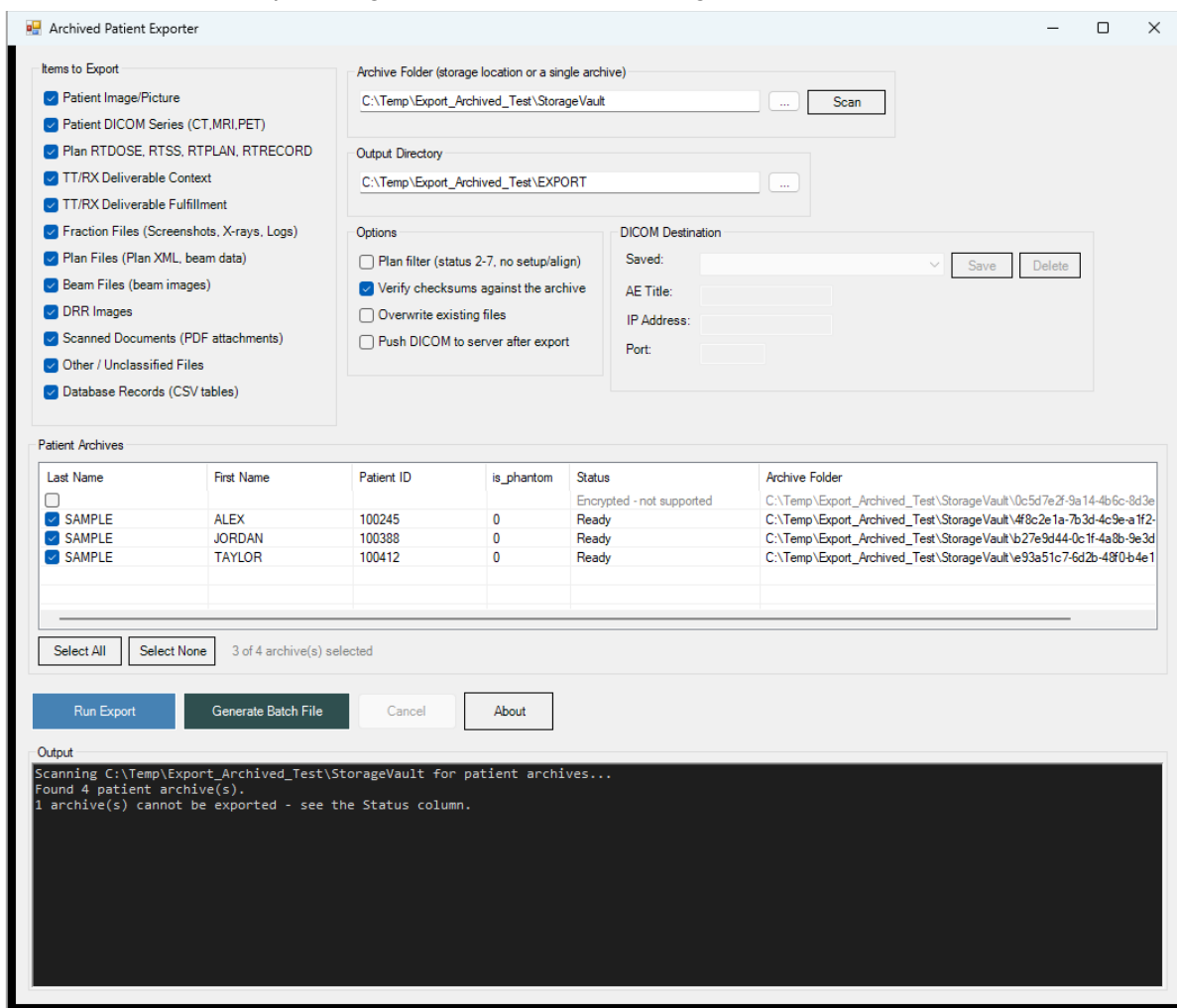


Figure 1 – Main window after scanning a storage location

6.2 Scanning and Selecting Archives

1. In the **Archive Folder** box, type the path of a storage location or of a single archive folder, or click ... to browse for it.
2. Click **Scan** (or press Enter in the Archive Folder box). The program searches the folder and its subfolders for patient archives and lists them under **Patient Archives**. Browsing to a folder with ... starts the scan automatically.

- Review the list. Each row shows the patient's last name, first name, patient ID, is_phantom value, status and archive folder. Archives with the status **Ready** are selected automatically, except phantom records (is_phantom 1; patient records show 0).
- Click a column heading to sort the list by that column; click it again to reverse the order. An arrow in the heading shows the current sort.
- Check or clear the check box of any archive, or use **Select All** and **Select None**. Select All also selects phantom records. The count below the list shows how many archives are selected.

Note: Scanning reads only the patient record of each archive, so even large storage locations are listed quickly. Click Cancel to stop a scan; the archives found so far stay in the list.

6.3 Selecting Items to Export

Under **Items to Export**, select the data you want to export. All items are selected by default:

Export Option	Description
Patient Image/Picture	Exports the photo uploaded to identify the patient, when the archive contains one.
Patient DICOM Series (CT,MRI,PET)	Exports every image series of the patient, including TomoTherapy/Radixact MVCT scans, to DICOM\<modality>\<series UID>.
Plan RTDOSE, RTSS, RTPLAN, RTRECORD	Exports each plan's RT structure sets, doses, plans and records to <plan>\DICOM\Plan_RTSTRUCT-DOSE.
TT/RX Deliverable Context	TomoTherapy/Radixact: the planning CT, RT plan, dose, structure set and RT records of each deliverable context (<plan>\DICOM\<modality>), plus its delivery plans, sinogram and reports (<plan>\Deliverable_files).
TT/RX Deliverable Fulfillment	TomoTherapy/Radixact: per-fraction delivery data – detector data, MVCT registrations, isocenters and density models – under <plan>\Fraction\<n>.
Fraction Files (Screenshots, X-rays, Logs)	CyberKnife: treatment screenshots, live x-ray images, logs and fraction files, under <plan>\Fraction\<n>.
Plan Files (Plan XML, beam data)	Exports planning files, including plan XML files and beam data, to <plan>\Plan_files.
Beam Files (beam images)	CyberKnife: beam images, to <plan>\Beam_files.
DRR Images	CyberKnife: DRR images and their generation files, to <plan>\DRR.
Scanned Documents (PDF attachments)	Exports PDF documents attached to the patient record, numbered in order, to <plan>\Documents (or Documents, for patient-level documents).
Other / Unclassified Files	Files linked only from other tables go to Other\<table name>; files no table references go to Unclassified. Keeps the export complete.
Database Records (CSV tables)	Saves every table in the archive as a CSV file in _Database, with copies of the archive manifest, audit trail and archive ID. See Section 6.7.

6.4 Configuring Export Options

1. Select an **Output Directory** where the exported patient folders will be saved. The directory is created automatically if it does not exist.
2. **Plan filter (status 2-7, no setup/align)** – check this to export only the plans the Patient DICOM Exporter would export (see Section 2.3). Unchecked by default, so every plan in the archive is exported.
3. **Verify checksums against the archive** – checked by default. As each file is copied, its size and checksum are compared with the values recorded in the archive. A mismatch is reported in the output panel and the export log, but the file is still copied.
4. **Overwrite existing files** – unchecked by default: any file that already exists at the destination is skipped and counted as “already existed”. Leaving this unchecked lets an interrupted export be re-run quickly, because previously copied files are not copied again. Check it to replace existing files.
5. **Push DICOM to server after export** – sends each exported patient folder to a DICOM server (for example, a PACS) when the export finishes, up to four patients at a time. When this option is enabled, fill in the **DICOM Destination** settings. Use the Saved dropdown to select a previously saved destination, which fills in the AE Title, IP Address and Port. Click **Save** to store the current settings for future use, or select an entry and click **Delete** to remove it. Saved destinations are kept in `dicom_destinations.csv` next to the program.
6. Click **Run Export** when all options are configured and you are ready to proceed.

6.5 Running and Monitoring the Export

The archives are exported one after another. Please be aware of the following:

- For each archive, the output panel shows the patient, the number of files in the archive by item, the patient folder, and any warnings, followed by the patient's summary.
- A progress bar below the output panel shows the copy progress of the current archive, and an elapsed timer shows the total duration of the session.
- Files are copied several at a time in parallel to improve performance. Large archives on a network share take longer than archives on a local disk.
- To stop the export, click **Cancel**. Files already being copied finish first; files not yet copied are reported as “Not processed (cancelled)”. Run the export again later to continue – existing files are skipped.
- When the export finishes, a message shows the total time, the number of archives converted and files copied, and the location of the export log (Figure 2). If any file was missing, failed to copy or did not match its checksum, the message is titled “Export Completed with Warnings”.

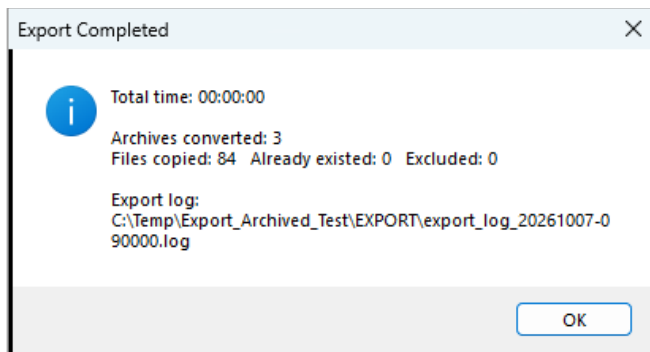


Figure 2 – Completion message

```

Output
Database tables written: 22

==> All archives
Archives converted: 3, failed: 0
Files in archive: 84 | copied: 84 | already existed: 0 | excluded: 0 | missing: 0 | failed: 0
Integrity: 84 checksum(s) verified, 0 mismatch(es), 0 not verifiable
Placed in Other/Unclassified: 9 file(s)
Renamed to avoid name collisions: 3 file(s)
Database tables written: 66

[Done] Total time: 00:00:00

```

Figure 3 – Output panel at the end of an export

6.6 Export Log and Verification

Each Run Export writes an export log, `export_log_<date>-<time>.log`, to the output directory. It records every file that needs attention and each patient's summary:

Log Entry	Meaning
[SKIPPED]	The file already existed in the output directory and Overwrite existing files was unchecked.
[NOT FOUND]	The archive's records list the file, but it is missing from the archive folder.
[FAILED]	The file could not be copied, for example because access was denied or the disk is full. The reason follows.
[MISMATCH]	The copied file's size or checksum differs from the value recorded in the archive. The file is kept, but should be treated as possibly damaged.
[RENAMED]	Two different files would have had the same name in the same folder; the second was saved as "name (2)".
[FAILED ARCHIVE]	The archive could not be read. The export continues with the next archive.

The summary written for each patient (and, for several archives, for the whole run) reads:

Summary Item	Meaning
Files in archive	The number of files the archive records for the patient.
copied	Files copied to the output directory.
already existed	Files skipped because they already existed (Overwrite existing files unchecked).
excluded	Files not exported because their item was unchecked, or their plan was excluded by the plan filter.
missing / failed	Files missing from the archive, or that could not be copied. See the log entries above.
Integrity	Checksums verified, mismatches, and files that could not be verified (no checksum recorded, or the checksum method is unavailable on this computer).
Placed in Other/Unclassified	Files exported to the Other or Unclassified folders.
Renamed	Files saved as "name (2)" to avoid a name collision.
Database tables written	The number of CSV files written to <code>_Database</code> .

Example of a patient's entries in the export log (timestamps omitted, long lines wrapped):

```
Archive 1/3: SAMPLE, ALEX (100245) -
E:\StorageVault\4f8c2e1a-7b3d-4c9e-alf2-5d6e7f809a1b
[RENAMED] Plan 1\Plan_files\plan.xml -> plan (2).xml (name collision)
Files in archive: 28 | copied: 28 | already existed: 0 | excluded: 0 |
missing: 0 | failed: 0
Integrity: 28 checksum(s) verified, 0 mismatch(es), 0 not verifiable
Placed in Other/Unclassified: 3 file(s)
Renamed to avoid name collisions: 1 file(s)
Database tables written: 22
```

Note: A complete export of a patient shows copied plus already existed plus excluded equal to Files in archive, with no missing, failed or mismatched files.

6.7 Database Records

When **Database Records (CSV tables)** is selected, each patient folder receives a `_Database` folder containing:

- One CSV file per table in the archive, named after the table (for example `PATIENT.csv`, `FILE_SYSTEM.csv`, `FRACTION.csv`, `TT_FRACTION_FULFILLMENT.csv`). The first row holds the column names.
- Copies of the archive's `PatientRecordManifestBO.xml`, `PatientAuditTrailList.xml` and `ArchiveId.txt`.

These files preserve the patient's treatment records (plans, fractions, beams, dose sessions, audit trail) after the archive has been converted to folders.

Note: Database keys are 19-digit numbers. When a CSV file is opened directly in Excel, these keys are shown in scientific notation and lose their last digits. To keep them exact, use `Data → From Text/CSV` and set the key columns to `Text`.

6.8 Additional Features

- **Generate Batch File** – creates a batch file (.bat) of copy commands for the selected archives and offers to save it. The batch file creates the patient folders and copies each file under its original name; informational lines are written as REM comments. A log of the generated lines, `batch_log_<date>-<time>.log`, is written to the output directory. The batch file only copies files: checksums are not verified, the `_Database` folder is not written, and DICOM is not pushed.
- **About** – displays program information, including version number, author and licensee details.

7. Workflow Overview

The following overview summarizes the complete archive export workflow. Refer to the corresponding sections of this manual for detailed step-by-step instructions.

STEP 1	Install the Archived Patient Exporter on a computer that can read the archive storage location.	<i>See Section 4</i>
STEP 2	Find the storage location that holds the patient archives.	<i>See Section 5</i>
STEP 3	Launch Export_Archived.exe, choose the archive folder and click Scan.	<i>See Sections 6.1 – 6.2</i>
STEP 4	Select the archives and the items to export.	<i>See Sections 6.2 – 6.3</i>
STEP 5	Choose the output directory, options and DICOM destination.	<i>See Section 6.4</i>
STEP 6	Click Run Export and monitor the output panel.	<i>See Section 6.5</i>
STEP 7	Review each patient's summary and the export log.	<i>See Section 6.6</i>

8. Troubleshooting

Symptom	Cause and Resolution
An archive's status is “Encrypted - not supported”	The archive is encrypted and cannot be read by this program. Restore the patient onto the CDMS or IDMS system and use the Patient DICOM Exporter.
Status “No CDMS*.tmp table file”, “No patient record” or “Unreadable”	The archive folder is incomplete or damaged, or the account has no read access. Check the folder's permissions and contents; use a backup copy of the archive if one exists.
“Missing from archive” warnings	Files listed in the archive's records are not in the archive folder. The rest of the patient is exported; the [NOT FOUND] entries in the export log list the missing files.
“Integrity mismatch” warnings	The archived file differs from the checksum recorded when it was archived. The file is still copied; treat it as possibly damaged.
Files in the Other or Unclassified folders	The archive links these files only from tables without a dedicated folder, or not at all. Nothing is lost. Contact TC Consulting if a dedicated folder is needed.
“Skipped N existing file(s)”	Files from a previous export are already in the output directory. This is expected when re-running an export; check Overwrite existing files to replace them.
“DICOM push skipped: ... was not found”	send_dicom.bat is not at the configured path. Copy it to C:\cdms, or update SendDicomCommand in Export_Archived.exe.config (see Section 4).
“Could not create output directory”	The output path is invalid or the account cannot write to it. Choose another folder or adjust the folder's permissions.

9. Disclaimer

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