

# Technical specifications and advice for file format migration

## Purpose

The purpose of this document is to provide Queensland public authorities with the recommended technical specifications for converting their digital public records to a new format – also known as **file format migration**. It is designed to help public authorities ensure that any format migration activity carried out on a public record produces a digital copy that can serve as an effective alternative to the source record.

## How to use the technical specifications

These technical specifications support an **outcomes-based** approach to file format migration. An outcomes-based approach allows for a more practical way to ensure quality assurance without locking public authorities into technical requirements that may change over time or are too resource intensive and technologically difficult to implement. Rather than prescribing specific file formats, resolutions or software, these technical specifications define the minimum outcomes that ensure converted public records remain legible, usable and accessible for as long as they are required.

As a general rule, your public authority should aim to use the highest technical specifications that can be realistically supported. For public records being converted, it is expected that these specifications, or higher, will be applied to ensure business use is maintained and to meet the conditions outlined in both DA 2940 *Temporary source records* and DA 2941 *Permanent source records created on or after January 1980*.

## File format migration

File format migration is the controlled process of converting digital files from one format to another to maintain accessibility, usability, and long-term sustainability. Unlike system or storage media migration which involves moving files from one location to another, format migration changes a file's structure without altering the content and data in the file itself. One example of file format migration would be converting an MS Word 1997-2003 file (.doc) to an MS Word 2007 format (.docx).

### When migration is necessary

File format migration becomes necessary when continued reliance on an existing format creates operational limitation or risk of data loss or inaccessibility to the public record. This may occur when one or more of the following scenarios apply:

- The format is becoming obsolete or is no longer supported by vendors
- The format relies on proprietary or undocumented specifications
- Software required to access or render the file is unavailable or incompatible with current operating systems
- The format presents known security vulnerabilities
- Users cannot access the file without specialised digital preservation tools
- Files cannot be readily shared across systems or workflows
- The format is not suitable for long-term retention or preservation.

## Minimum outcomes for file format migration

As with any digital intervention, migrating files to new formats comes with potential risks. If done incorrectly, the process can unintentionally change the content of a file, introduce new errors or lead to the loss of information. Therefore, it is important to conduct the appropriate quality assurance checks immediately after the migration activity.

Under *Source Records Retention and Disposal Schedule* a converted record must be an accurate, legible and authentic reproduction in its entirety. Examples of when a file has been successfully migrated to a new format may include:

- the new file format is easily opened and used by all users within current operating systems
- all informational content and data present in the source record are present and readable in the migrated version
- the layout and formatting of content in the source record is reproduced in the migrated version – for example, headings, indentations, logically structured text etc.
- resolution quality of the new file format matches the source record – for example, colour images vs. greyscale
- the functionality of the file remains intact – for example, hyperlinked text, macros, drop-down menus, digital signatures, or the ability to edit the content (if permissible) are still available to the user
- captured metadata that supports ongoing access to records and allows for digital preservation
- retention of any original metadata, such as title or date, to ensure continued access to the converted record and that it accurately reflects the source.

### Additional points to consider when migrating file formats are:

- Current and future access to the public record should always factor in any decision to migrate files to different formats. As with all software and technology, no file format is guaranteed to remain accessible in the future. Since ongoing access depends on the availability of certain applications used to support file formats, your public authority should consider practical solutions that help mitigate potential loss of access to digital content.
- Compression can reduce file size, but excessive compression may result in the permanent loss of information. Consider what information could be affected and whether compression may prevent the newly converted record from being an accurate reproduction of the source. Lossless compression is recommended.
- Ensure that the tools or applications used for format migration are fit for purpose, taking into account the value of the records and their required retention period.

## What to look for when selecting file formats

The file format selected for format migration affects how the record is preserved, managed and accessed over time. When converting public records to new formats, your public authority should select file formats that support ongoing usability, accessibility and long-term management.

QSA doesn't prescribe specific file formats, as suitability may change over time in response to technological developments and industry practice. When selecting file formats, your public authority should consider:

- how widely supported or adopted the format is, including whether it relies on proprietary software
- if the format is independent of specific hardware, applications or operating systems
- the ability of the format to store or support metadata
- whether compression is used to convert the source record, and if so, is it the right compression (lossless instead of lossy)

Further information about recommended file formats is available in the [File formats for long-term digital public records](#) guidance on Forgov.

## Quality assurance

Quality assurance in file format migration is essential to verify that content, metadata, functionality, and integrity are preserved during conversion, preventing silent data loss or degradation. It is recommended that quality assurance steps are built into workflows for all format migration activities.

Quality assurance is a critical part of the conversion process, especially when determining if your public authority can dispose of the source records afterwards. Remember, under the *Source Records Retention and Disposal Schedule*, if the quality assurance checks identify problems that cannot be resolved through any restoration processes, the source record must be retained. Responsibility for ensuring the quality of converted public records and authorising the disposal of source records remains with your public authority.

## Document the process

To demonstrate that your public authority's decisions related to any format migration activity were considered and authorised, necessary documentation needs to be created and retained. This documentation provides evidence of a defensible process. Not all projects will require the same amount of documentation, for instance where migrating file formats is part of a routine business process, but it is good practice to document certain stages of all format migration work that takes place. This documentation could make up part of the quality assurance checks above.

Examples of documentation can include, but are not limited to:

- internal policies and procedures
- project plans or schedules for large scale migration activities
- confirmation that all quality assurance checks have been completed and verified
- evidence that the disposal of the source records has been endorsed and signed off by the Chief Executive or authorised delegate
- evidence that appropriate storage for the digital records is in place

## Contact

For further assistance, please contact the Digital Archive team at Queensland State Archives

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