



A checksum on a digital object is a 'digital fingerprint' whereby even the smallest change to the object will cause the checksum to change completely. Checksums are a tool for ensuring the integrity of digital objects. An unchanged checksum indicates that no change has occurred to the object's data since the checksum was created.

This fact sheet explains why we require checksums for digital transfers and how to generate checksums.

Why are checksums important?

Checksums have three important functions:

1. To know that an object has been successfully transferred.
2. To know that an object's integrity has been maintained while stored.
3. To be given to users of the object in the future so they know that the object has been retrieved from storage and delivered to them without any changes occurring to the data.

It is important to remember that while checksums can detect changes to digital objects, they do not document where the change occurred or what the change is.

Why is a checksum required at transfer?

Public offices must provide checksums when transferring digital records to the State Archives Collection. We use checksums to ensure that records are not altered, lost or corrupted from the time they are exported from the organisation's system until received by us.

How to generate a checksum for transfer

Checksums can be created and validated by a number of software tools, many of which are open source. Archives New Zealand provides a [list of some open source tools](#) that may be used.

Checksums are generated using standard algorithms known as hash functions and there are many different types. We have the capability to work with SHA 1, SHA 2 (256) or MD5 algorithms.

Further reading

Archives New Zealand, *Checksums*, archives.govt.nz/manage-information/resources-and-guides/operational/checksums (viewed 23 July 2020)

Digital Preservation Coalition, *Fixity and checksums*, www.dpconline.org/handbook/technical-solutions-and-tools/fixity-and-checksums (viewed 23 July 2020)