Newcastle University
How to use 7-Zip to encrypt and decrypt files

Introduction

This guide shows you how to use 7-Zip to create AES-256 encrypted ZIP archives for securely sharing confidential and sensitive data with other people.

This guide shows you how to:

- Download and install 7-Zip
- Create AES-256 encrypted ZIP archives
- Extract files from AES-256 encrypted ZIP archives

You should read this document in its entirety before attempting this procedure.

By following the guidance in this document you are helping to improve compliance with the University's Information Security and Data Protection Policies.

You should also read the information security guidance on the ISS web site at:
http://www.ncl.ac.uk/itservice/security

Requirements for sharing AES-256 encrypted ZIP archives

Before you can share an AES-256 encrypted ZIP archive with another person, you need to make sure that:

- You have received authorisation from the data owner (or other appropriate authority) to copy and share the data
- The recipient has 7-Zip or WinZip installed on their own computer

What is encryption?

Encryption helps secure confidential and sensitive data by converting it into a form that cannot be understood by criminals.

Why use AES-256?

AES-256 is a secure and reliable method of encryption that is vendor neutral and compatible with other ZIP compression programs that provide encryption capabilities (e.g. WinZip).

When do I need to create an AES-256 encrypted ZIP archive?

AES-256 encrypted ZIP archives need to be used for all confidential and sensitive data when:

- Emailed across non-secure and untrusted networks (e.g. the Internet)
- Kept on an unencrypted portable storage device (e.g. CD-ROM, USB thumb drive, etc…)

1. Download and install 7-Zip

Go to http://www.7-zip.org and download the version of 7-Zip that is best suited to your version of Microsoft Windows (e.g. 32 bit or 64 bit).

The download link on the 7-Zip web site will redirect you to SourceForge. SourceForge is a web repository for open source software. 7-Zip will automatically download after you have been redirected.

Save the 7-Zip installer (Fig 1) to your Windows Desktop or other location where it can be easily found.

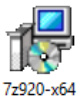

Fig 1, the 7-Zip installer icon

Double click on the 7-Zip icon to start the installer. You will then be shown the 7-Zip installer window (Fig 2). Click "Next" to continue

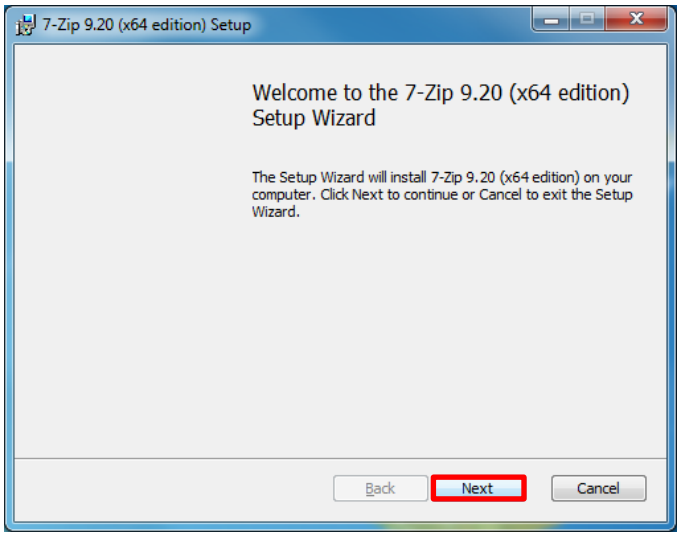

Fig 2, the 7-Zip installer window

Read the "End-User License Agreement" (Fig 3), tick "I accept the terms of the License Agreement" and then click "Next to continue"

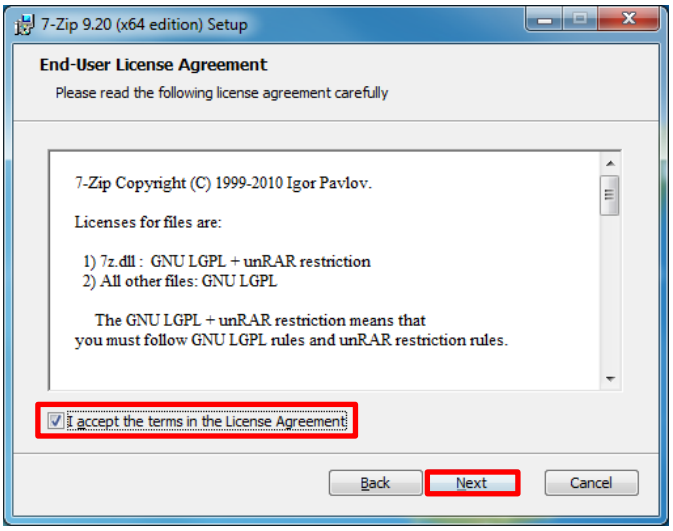

Fig 3, the "End-User License Agreement"

Leave the "Custom Setup" (Fig 4) options as they are and click "Next" to continue

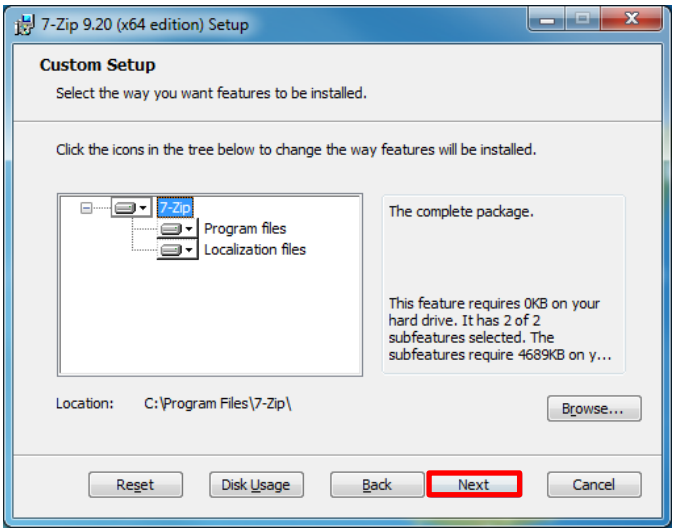

Fig 4, the "Custom Setup" options

7-Zip is now “Ready to Install” (Fig 5), click “Install” to continue

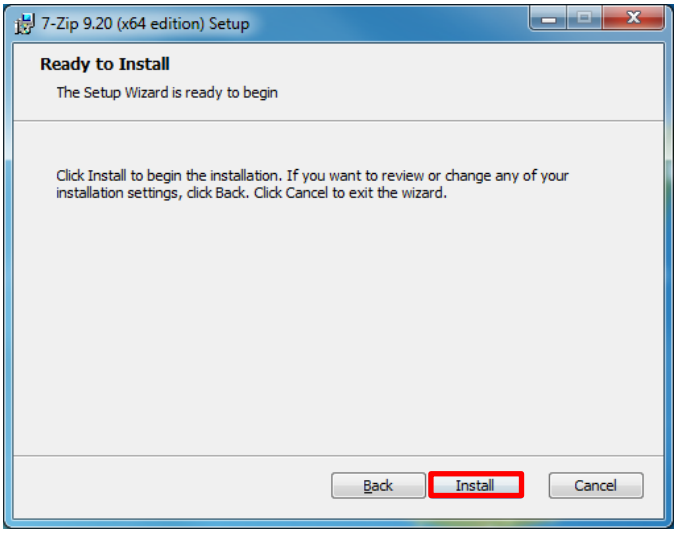

Fig 5, starting the 7-Zip installation process

Upon completing the installation of 7-Zip (Fig 6), click “Finish” to exit the installer

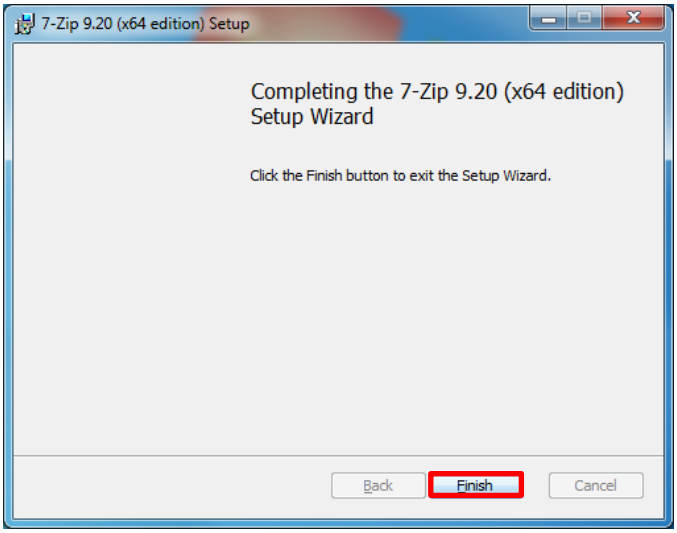

Fig 6, finishing the 7-Zip installation process

2. Using 7-Zip to create AES-256 encrypted ZIP archives

Open 7-Zip by clicking on the 7-Zip File Manager icon (Fig 7) located in your Windows Start Menu or on your Windows Start Screen if you are using Windows 8.

Fig 7, the "7-Zip File Manager" icon

In the "7-Zip File Manager" window (Fig 8) browse to the location of the files that you want to compress and encrypt.

Select the files you want to compress and encrypt by holding down the "Ctrl" key and left clicking on each file. Click "Add" when you have finished selecting all of your files.

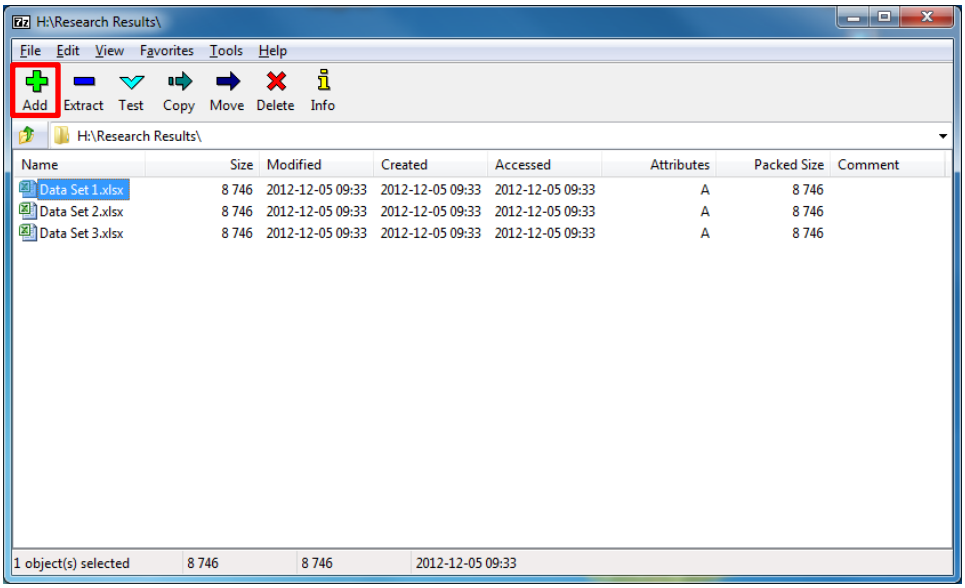

Fig 8, the "7-Zip File Manager" window showing files that can be compressed and encrypted

In the "Add to Archive" window (Fig 9), make the following changes:

- Under "Archive" enter a name for your AES-256 encrypted ZIP archive
- Change "Archive" format to **ZIP**
- Change "Encryption method" to **AES-256**
- Make sure that your archive name ends with **.ZIP**

Under "Enter Password" enter a passphrase that contains at least one number and one special character, such as **Securing 003 files!**

Click “OK” to create the encrypted archive.

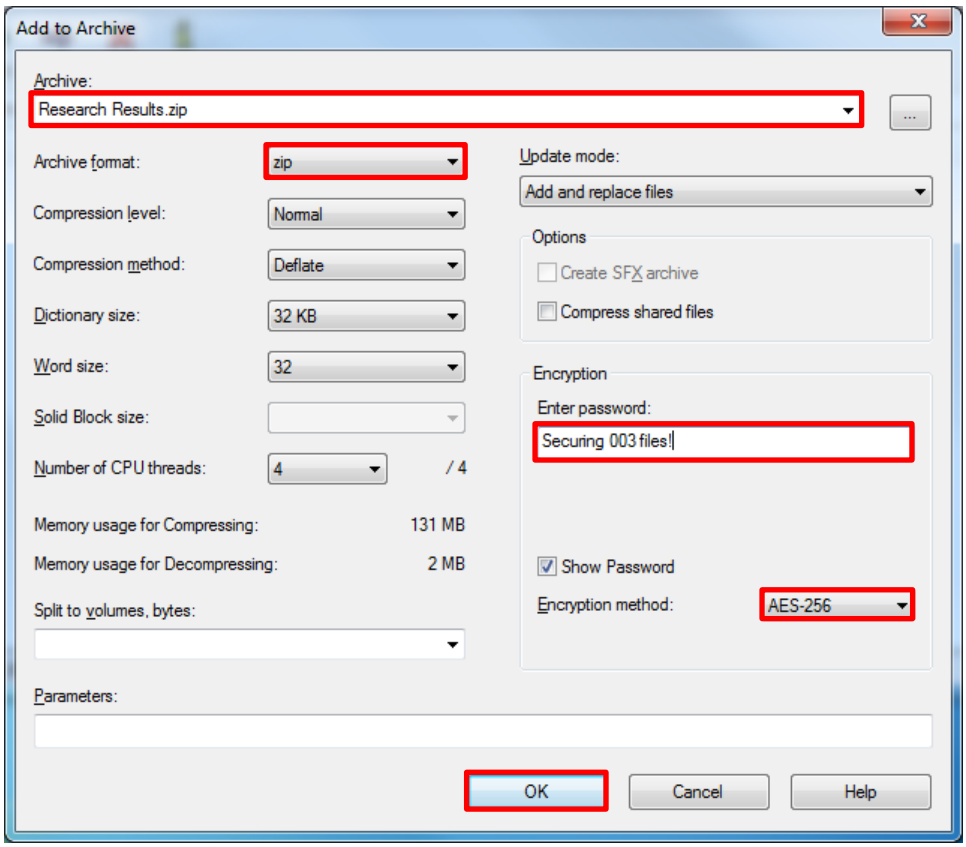

Fig 9, the “Add to Archive” window

Your AES-256 encrypted ZIP archive will be located in the same directory that contains the files that you selected earlier.

Your newly created AES-256 encrypted ZIP archive is now ready to attach to an email or store on a portable storage device.

3. Using 7-Zip to decrypt and extract files from AES-256 encrypted ZIP archives

Open 7-Zip by clicking on the 7-Zip File Manager icon (Fig 10) located in your Windows Start Menu or on your Windows Start Screen if you are using Windows 8.

Fig 10, the "7-Zip File Manager" icon

Browse to the location that contains your AES-256 encrypted ZIP archive (Fig 10).

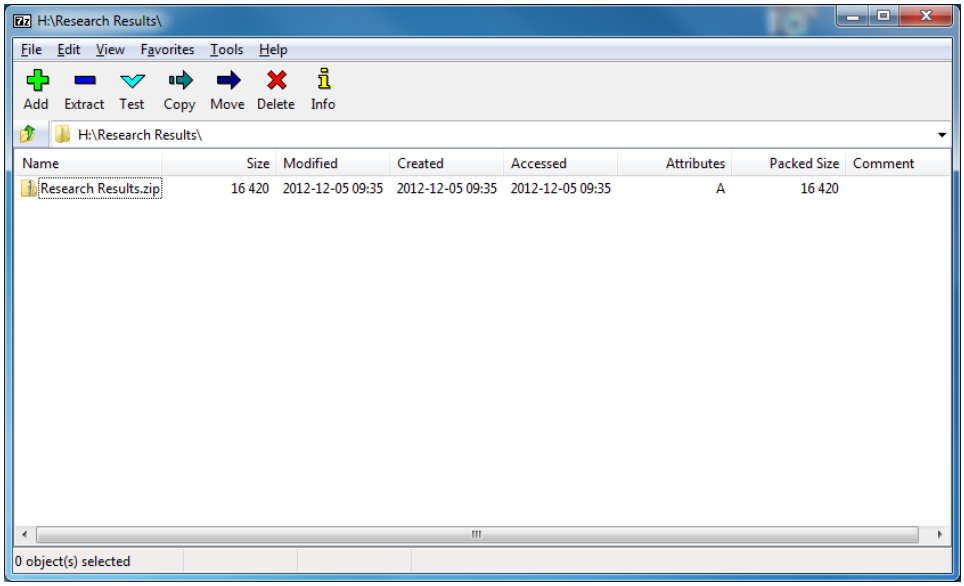

Fig 10, browsing to the location of your encrypted ZIP file archive

Double click on your AES-256 encrypted ZIP archive to see its contents (Fig 11).

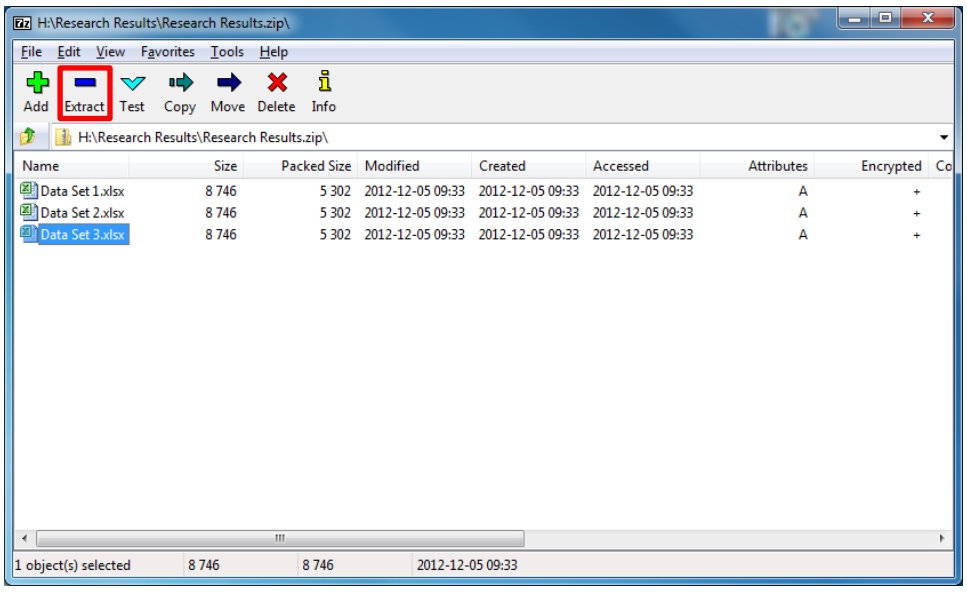

Fig 11, the 7-Zip File Manager showing the contents of an AES-256 encrypted ZIP archive

Select the files you want to decompress and decrypt by holding down the "Ctrl" key and left clicking on each file. Click "Extract" (Fig 11) when you have finished selecting your files.

Select the location that you want to extract your files to (Fig 12). The default location is same location that contains your AES-256 encrypted ZIP archive.

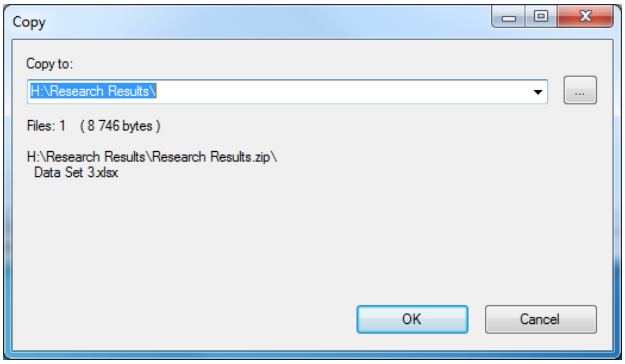

Fig 12, selecting a location to extract the contents of your archive to

Enter the passphrase (Fig 13) that was used to encrypt the ZIP archive and then click "OK" or hit the "Enter" key on your keyboard.

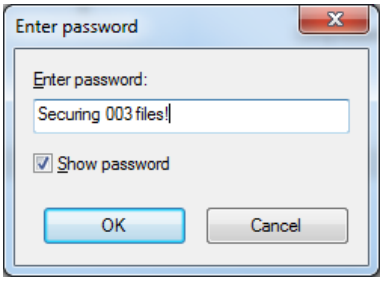

Fig 13, entering your decryption passphrase

Your files will now be extracted and ready to use (Fig 14).

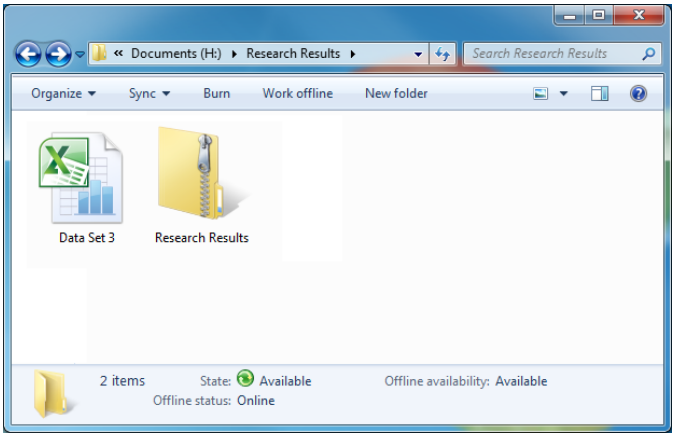

Fig 14, your extracted files

4. Protecting your encryption passphrase

Your passphrase is the only thing that stops a criminal from accessing the contents of your AES-256 encrypted ZIP archive if it falls into the wrong hands. If you need to communicate your passphrase to a recipient, then you **must** communicate that passphrase by telephone or in a face to face conversation.

Do not forget your passphrase. It is not possible for us to recover your data if you forget your passphrase.

5. Maintain access to your important work

Save a master copy of your data, in an unencrypted form, to the ISS Filestore or other secure storage location. This will ensure that your data can still be accessed if you do forget your passphrase or if the AES-256 encrypted ZIP archive is damaged.

6. Information security incidents

If you discover an incident that places sensitive or confidential information at risk, then you **must** notify the ISS Information Security Team through the ISS Service Desk by email (**it.servicedesk@ncl.ac.uk**) or by telephone (**0191 222 5999**).

7. Information Security checklist

Ref	Requirement	✓
1	Have you familiarised yourself with the prerequisites for using 7-Zip?	
2	Have you downloaded and installed 7-Zip?	
3	Do you know how to create an AES-256 encrypted ZIP archive?	
4	Do you know how to extract files from an AES-256 encrypted ZIP archive?	
5	Do you know how to protect your passphrase?	
6	Do you know how to maintain access to your important work?	
7	Do you know how to report an information security incident?	
8	Have you read the University's Information Security and Data Protection Policies?	