

File Size Conversion Chart

(KB, MB, GB, TB and Digital Storage Units Explained)

Quick reference guide for converting digital file sizes and storage units

Digital files are measured using units such as **bytes**, **kilobytes (KB)**, **megabytes (MB)**, **gigabytes (GB)**, **terabytes (TB)**, **petabytes (PB)**, and **beyond**. Understanding these units makes it easier to compare file sizes, storage capacity, downloads, backups, memory cards, hard drives, cloud storage, and computer data.

This downloadable guide provides a practical **file size conversion chart**, conversion tables, formulas, examples, and quick-reference information for everyday use.

Quick File Size Conversion Chart

For traditional binary-style computing conversions commonly used in many operating-system and technical contexts:

File Size	Equivalent
1 KB	1,024 bytes
1 MB	1,024 KB
1 GB	1,024 MB
1 TB	1,024 GB
1 PB	1,024 TB
1 EB	1,024 PB
1 ZB	1,024 EB
1 YB	1,024 ZB

Most useful conversions

Conversion	Result
1 KB	1,024 bytes
1 MB	1,048,576 bytes
1 GB	1,073,741,824 bytes
1 TB	1,099,511,627,776 bytes
1 MB	1,024 KB
1 GB	1,024 MB
1 TB	1,024 GB

 **Tip:** If you only need a quick everyday reference, remember: **1 MB = 1,024 KB**, **1 GB = 1,024 MB**, and **1 TB = 1,024 GB** under the binary-style convention.

What Is a Byte?

A **byte (B)** is a basic unit used to measure digital information.
In many computing contexts, one byte represents 8 bits.

The common sequence of digital storage units is:

Byte → Kilobyte → Megabyte → Gigabyte → Terabyte → Petabyte → Exabyte → Zettabyte → Yottabyte

These units become progressively larger as digital data increases.

For example:

- A short text file may occupy only a few KB.
- A photograph may occupy several MB.

- A high-quality video may occupy several GB.
- A computer backup may occupy hundreds of GB or several TB.

Bits and Bytes

Two terms that are often confused are **bit** and **byte**.

Unit	Symbol	Meaning
Bit	b	Binary digit
Byte	B	8 bits

Therefore:

1 byte = 8 bits

The capitalization is important.

- **b** usually means bit.
- **B** means byte.

This distinction is particularly important when comparing **internet speeds** with **file sizes**.

For example, an internet connection may be advertised in **Mbps**, meaning megabits per second, while a downloaded file may be displayed in **MB**, meaning megabytes.

KB to MB Conversion

A common question is:

How many KB are in 1 MB?

Using the binary-style conversion:

1 MB = 1,024 KB

Therefore:

KB	MB
1 KB	0.0009766 MB
10 KB	0.0097656 MB
100 KB	0.0976563 MB
512 KB	0.5 MB
1,024 KB	1 MB
2,048 KB	2 MB
5,120 KB	5 MB
10,240 KB	10 MB

How to convert KB to MB

Divide the number of KB by 1,024.

$$\text{MB} = \text{KB} \div 1,024$$

Example

If a file is **5,120 KB**:

$$5,120 \div 1,024 = 5 \text{ MB}$$

So, **5,120 KB = 5 MB** under this convention.

MB to KB Conversion

To convert MB to KB, multiply by 1,024.

$$\text{KB} = \text{MB} \times 1,024$$

Examples:

MB	KB
1 MB	1,024 KB
2 MB	2,048 KB
5 MB	5,120 KB
10 MB	10,240 KB

25 MB	25,600 KB
50 MB	51,200 KB
100 MB	102,400 KB
500 MB	512,000 KB

✦ **Quick answer:** 10 MB is approximately **10,240 KB** using the 1,024-based convention.

MB to GB Conversion

Another extremely common conversion is **MB to GB**.

Using the binary-style convention:

$$1 \text{ GB} = 1,024 \text{ MB}$$

Therefore:

$$\text{GB} = \text{MB} \div 1,024$$

MB	GB
100 MB	0.0977 GB
250 MB	0.2441 GB
500 MB	0.4883 GB
1,024 MB	1 GB
2,048 MB	2 GB
5,120 MB	5 GB
10,240 MB	10 GB
50,000 MB	48.8281 GB
100,000 MB	97.6563 GB

Example

Suppose you have a video that is **2,048 MB**.

$$2,048 \div 1,024 = 2 \text{ GB}$$

Therefore:

$$2,048 \text{ MB} = 2 \text{ GB}$$

GB to MB Conversion

To convert GB into MB:

$$\text{MB} = \text{GB} \times 1,024$$

GB	MB
1 GB	1,024 MB
2 GB	2,048 MB
4 GB	4,096 MB
8 GB	8,192 MB
16 GB	16,384 MB
32 GB	32,768 MB
64 GB	65,536 MB
128 GB	131,072 MB
256 GB	262,144 MB
512 GB	524,288 MB
1 TB	1,024 GB

GB to TB Conversion

Using the binary-style convention:

$$1 \text{ TB} = 1,024 \text{ GB}$$

To convert GB to TB:

$$\text{TB} = \text{GB} \div 1,024$$

GB	TB
100 GB	0.0977 TB
250 GB	0.2441 TB
500 GB	0.4883 TB

1,024 GB	1 TB
2,048 GB	2 TB
4,096 GB	4 TB
5,120 GB	5 TB
10,240 GB	10 TB

Example

A storage drive has a capacity of **2,048 GB**.

$$2,048 \div 1,024 = \mathbf{2\ TB}$$

Therefore:

$$\mathbf{2,048\ GB = 2\ TB}$$

TB to GB Conversion

To convert TB to GB:

$$\mathbf{GB = TB \times 1,024}$$

TB	GB
1 TB	1,024 GB
2 TB	2,048 GB
4 TB	4,096 GB
5 TB	5,120 GB
8 TB	8,192 GB
10 TB	10,240 GB
20 TB	20,480 GB
50 TB	51,200 GB
100 TB	102,400 GB

Complete Digital Storage Conversion Table

The following table provides a convenient reference from bytes through larger storage units.

Unit	Symbol	Binary-style equivalent
Byte	B	1 byte
Kilobyte	KB	1,024 bytes
Megabyte	MB	1,024 KB
Gigabyte	GB	1,024 MB
Terabyte	TB	1,024 GB
Petabyte	PB	1,024 TB
Exabyte	EB	1,024 PB
Zettabyte	ZB	1,024 EB
Yottabyte	YB	1,024 ZB

This progression can be remembered as:

B → KB → MB → GB → TB → PB → EB → ZB → YB

Each step is **1,024 times larger** under this convention.

File Size Conversion Chart in Both Directions

From	To	Operation
Bytes	KB	÷ 1,024
KB	Bytes	× 1,024
KB	MB	÷ 1,024
MB	KB	× 1,024
MB	GB	÷ 1,024
GB	MB	× 1,024
GB	TB	÷ 1,024
TB	GB	× 1,024
TB	PB	÷ 1,024
PB	TB	× 1,024
PB	EB	÷ 1,024

EB	PB	× 1,024
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Decimal vs Binary File Size Units

One important detail is that **1,000-based and 1,024-based conversions are both encountered in technology.**

This can cause confusion when comparing storage devices, operating systems, applications, and technical documentation.

Decimal units

Decimal SI-style units use powers of 1,000:

Unit	Decimal value
1 KB	1,000 bytes
1 MB	1,000 KB
1 GB	1,000 MB
1 TB	1,000 GB

Binary units

Binary units use powers of 1,024:

Unit	Binary value
1 KiB	1,024 bytes
1 MiB	1,024 KiB
1 GiB	1,024 MiB
1 TiB	1,024 GiB

The technically distinct binary prefixes are:
KiB, MiB, GiB, TiB, PiB, EiB, ZiB, YiB

✦ **Important:** In everyday usage, people frequently use KB, MB, GB, and TB when they actually mean the corresponding binary-style quantities. This guide provides both conventions so you can understand why different systems may show slightly different values.

Decimal Storage Conversion Chart

Unit	Decimal equivalent
1 KB	1,000 bytes
1 MB	1,000,000 bytes
1 GB	1,000,000,000 bytes
1 TB	1,000,000,000,000 bytes
1 PB	1,000,000,000,000,000 bytes
1 EB	1,000,000,000,000,000,000 bytes

This convention is commonly used when manufacturers describe the capacity of storage products.

Binary Storage Conversion Chart

Unit	Equivalent
1 KiB	1,024 bytes
1 MiB	1,024 KiB
1 GiB	1,024 MiB
1 TiB	1,024 GiB
1 PiB	1,024 TiB
1 EiB	1,024 PiB
1 ZiB	1,024 EiB
1 YiB	1,024 ZiB

This distinction is useful when reading technical documentation or comparing reported storage capacity with the amount shown by a computer.

Why Does a 1 TB Drive Sometimes Show Less Than 1 TB?

This is a common question.

Storage manufacturers generally use decimal units when advertising capacity.

Therefore:

$$1 \text{ TB} = 1,000,000,000,000 \text{ bytes}$$

A computer operating system may display capacity using a different convention or reserve some space for formatting, file systems, system data, recovery partitions, or other purposes.

As a result, the displayed capacity can appear smaller than the advertised capacity.

 This does not necessarily mean that storage capacity is missing. The difference can result from **unit conventions and reserved system space**.

Common File Sizes

Understanding typical file sizes makes the conversion chart easier to use.

Type of File	Typical Size Range
Plain text document	KB
Small PDF	Hundreds of KB to several MB
Word document	KB to several MB
Spreadsheet	KB to many MB
Smartphone photo	Several MB
High-resolution photo	Several MB to tens of MB
Music file	Several MB
Short video	Tens or hundreds of MB
HD video	Hundreds of MB to several GB
Large software installer	Hundreds of MB to several GB
Game installation	Several GB to hundreds of GB
Computer backup	Tens of GB to several TB

These are general examples rather than fixed file-size limits. Actual sizes vary significantly according to file format, compression, resolution, quality, duration, and content.

File Size Examples for Everyday Use

Example 1: A 5 MB photo

A 5 MB image is approximately:

$$5 \times 1,024 = 5,120 \text{ KB}$$

So:

$$5 \text{ MB} = 5,120 \text{ KB}$$

Example 2: A 10 GB video collection

Using the 1,024-based conversion:

$$10 \times 1,024 = 10,240 \text{ MB}$$

Therefore:

$$10 \text{ GB} = 10,240 \text{ MB}$$

Example 3: A 2 TB backup drive

$$2 \times 1,024 = 2,048 \text{ GB}$$

Therefore:

$$2 \text{ TB} = 2,048 \text{ GB}$$

Example 4: 500 MB of files

To convert MB to GB:

$$500 \div 1,024 \approx 0.488 \text{ GB}$$

Therefore:

$$500 \text{ MB} \approx 0.488 \text{ GB}$$

Example 5: 50,000 KB

To convert KB to MB:

$$50,000 \div 1,024 \approx 48.83 \text{ MB}$$

Therefore:

$$50,000 \text{ KB} \approx 48.83 \text{ MB}$$

How to Convert File Sizes Manually

The easiest method is to identify the direction of the conversion.

Converting a smaller unit to a larger unit

Divide by 1,024 for each step when using the binary-style convention.

For example:

KB → MB

$$\text{KB} \div 1,024 = \text{MB}$$

MB → GB

$$\text{MB} \div 1,024 = \text{GB}$$

GB → TB

$$\text{GB} \div 1,024 = \text{TB}$$

Converting a larger unit to a smaller unit

Multiply by 1,024 for each step.

For example:

MB → KB

$$\text{MB} \times 1,024 = \text{KB}$$

GB → MB

$$\text{GB} \times 1,024 = \text{MB}$$

TB → GB

$$\text{TB} \times 1,024 = \text{GB}$$

Quick Conversion Formula

For a one-step conversion:

$$\text{Larger unit} = \text{Smaller unit} \div 1,024$$

$$\text{Smaller unit} = \text{Larger unit} \times 1,024$$

For multiple steps, repeat the operation.

For example, converting GB to KB:

$$\text{GB} \times 1,024 \times 1,024 = \text{KB}$$

Therefore:

$$1 \text{ GB} = 1,048,576 \text{ KB}$$

Common KB to MB Conversions

KB	MB
512 KB	0.5 MB
1,024 KB	1 MB
2,048 KB	2 MB
3,072 KB	3 MB
5,120 KB	5 MB
10,240 KB	10 MB
20,480 KB	20 MB
50,000 KB	48.83 MB
100,000 KB	97.66 MB

Common MB to GB Conversions

MB	GB
512 MB	0.5 GB
1,024 MB	1 GB
2,048 MB	2 GB

5,120 MB	5 GB
10,240 MB	10 GB
20,480 MB	20 GB
50,000 MB	48.83 GB
100,000 MB	97.66 GB
500,000 MB	488.28 GB
1,024,000 MB	1,000 GB

Common GB to TB Conversions

GB	TB
100 GB	0.0977 TB
250 GB	0.2441 TB
500 GB	0.4883 TB
750 GB	0.7324 TB
1,024 GB	1 TB
2,048 GB	2 TB
3,072 GB	3 TB
5,120 GB	5 TB
10,240 GB	10 TB

How Many KB Are in 1 MB?

1 MB = 1,024 KB under the commonly used binary-style convention.

Under the decimal convention:

1 MB = 1,000 KB

This is why it is important to know which unit convention is being used.

How Many MB Are in 1 GB?

1 GB = 1,024 MB using the binary-style convention.

Using decimal SI units:

1 GB = 1,000 MB

How Many GB Are in 1 TB?

1 TB = 1,024 GB using the binary-style convention.

Using decimal units:

1 TB = 1,000 GB

How Many Bytes Are in 1 KB?

Using the binary-style convention:

1 KB = 1,024 bytes

Using strict binary terminology:

1 KiB = 1,024 bytes

Using decimal SI terminology:

1 kB = 1,000 bytes

File Size Conversion for Downloads

File-size conversions are especially useful when downloading large files.

For example, a download may be listed as:

2.5 GB

To estimate the size in MB using the 1,024-based convention:

$2.5 \times 1,024 = \mathbf{2,560\ MB}$

Therefore:

2.5 GB $\approx$ 2,560 MB

This can help you estimate how much storage space a download will require.

File Size and Internet Speed Are Different

File size and internet speed should not be confused.

A file might have a size of:

100 MB

while an internet connection might be advertised at:

100 Mbps

The first is a measurement of **file size**.

The second is a measurement of **data transfer speed**.

Also remember:

1 byte = 8 bits

So converting between MB and Mbps requires more than simply changing the unit label.

Storage Capacity Planning

File-size conversion is useful when deciding how much storage you need.

For example, suppose your files average 5 MB each.

If you have approximately 10,000 such files:

$5 \text{ MB} \times 10,000 = \mathbf{50,000 \text{ MB}}$

Using the 1,024-based conversion:

$50,000 \div 1,024 \approx \mathbf{48.83 \text{ GB}}$

So the files would require roughly **49 GB**, before allowing for additional system or file-management overhead.

File Size Conversion for Cloud Storage

Cloud storage plans are commonly expressed in GB or TB.

If your files are primarily photos, videos, documents, or backups, converting their total size helps you estimate whether a storage plan will be sufficient.

For example:

Data	Approximate Size
Documents	5 GB
Photos	100 GB
Videos	300 GB
Backups	500 GB
Total	905 GB

Using the 1,024-based convention:

$905 \div 1,024 \approx \mathbf{0.884 \text{ TB}}$

So the total is approximately **0.88 TB**.

File Size Conversion for Website Uploads

Website upload limits are frequently expressed in:

- KB
- MB
- GB

For example, if a website allows a maximum upload of **10 MB**, that corresponds to approximately:

$\mathbf{10 \times 1,024 = 10,240 \text{ KB}}$

Therefore, a file larger than approximately **10,240 KB** may exceed a 10 MB limit when the system uses a 1,024-based conversion.

⚠ Always check the specific website's stated limit and unit convention because different systems may use decimal or binary definitions.

File Size Conversion for Email Attachments

Email services often impose attachment limits.

If an attachment limit is stated as **25 MB**, that is approximately:

$\mathbf{25 \times 1,024 = 25,600 \text{ KB}}$

However, email attachments can also involve encoding overhead, meaning the maximum usable file size can differ from the simple conversion.

For that reason, it is usually safer to keep attachments comfortably below the stated limit.

File Size Conversion for Images

Image file sizes depend heavily on:

- Resolution
- Image format
- Compression
- Color depth
- Metadata
- Quality settings

A JPEG photograph might be only a few MB, while an uncompressed or high-resolution image can be much larger.

Common image formats include:

Format	Typical Use
JPG/JPEG	Photographs
PNG	Graphics and transparency
WebP	Web images
GIF	Simple animations
SVG	Vector graphics
TIFF	High-quality images and publishing

There is no universal file size for a particular image format.

File Size Conversion for Videos

Video files can become much larger than documents or photographs.

Video size depends on:

- Resolution
- Frame rate
- Bitrate
- Codec
- Duration
- Audio quality
- Compression

For example, a short compressed video might occupy hundreds of MB, while a high-resolution recording can occupy several GB.

This makes GB and TB conversions especially useful for video creators, editors, photographers, and backup users.

File Size Conversion for Computer Storage

Computer storage is usually discussed in:

GB and TB

For example:

- 128 GB
- 256 GB
- 512 GB
- 1 TB
- 2 TB
- 4 TB

The actual available space shown by a device can differ from the advertised capacity because of unit conventions, formatting, system files, and reserved storage.

File Size Conversion for Mobile Phones

Smartphones commonly provide storage capacities such as:

- 64 GB
- 128 GB
- 256 GB
- 512 GB
- 1 TB

A phone with 256 GB of advertised storage does not necessarily provide 256 GB of completely free user storage because the operating system and pre-installed software also occupy space.

File Size Conversion for Backups

Backups can grow rapidly over time.

If you back up:

- 250 GB of documents and media
- 300 GB of videos
- 150 GB of photos

Your total backup data is:

700 GB

Using the binary-style conversion:

$700 \div 1,024 \approx \mathbf{0.684 \text{ TB}}$

Therefore, 700 GB is approximately **0.68 TB**.

When planning backups, it is wise to leave additional capacity for future files and multiple backup versions.

File Size Conversion Cheat Sheet

For quick reference:

Conversion	Formula
Bytes → KB	Bytes $\div$ 1,024
KB → Bytes	KB $\times$ 1,024
KB → MB	KB $\div$ 1,024
MB → KB	MB $\times$ 1,024
MB → GB	MB $\div$ 1,024
GB → MB	GB $\times$ 1,024
GB → TB	GB $\div$ 1,024
TB → GB	TB $\times$ 1,024
TB → PB	TB $\div$ 1,024
PB → TB	PB $\times$ 1,024

Frequently Asked Questions

How many KB are in 1 MB?

Using the binary-style convention commonly encountered in computing:

1 MB = 1,024 KB.

Using decimal SI units, 1 MB is 1,000 KB.

How many MB are in 1 GB?

Using the binary-style convention:

1 GB = 1,024 MB.

Using decimal units:

1 GB = 1,000 MB.

How many GB are in 1 TB?

Using the binary-style convention:

1 TB = 1,024 GB.

Using decimal units:

1 TB = 1,000 GB.

How many bytes are in 1 MB?

Using the 1,024-based convention:

1 MB = 1,048,576 bytes.

This is because:

$1,024 \times 1,024 = 1,048,576$.

Is 1 GB equal to 1,000 MB or 1,024 MB?

It depends on the convention.

Under decimal SI units:

1 GB = 1,000 MB

Under binary-style computing conversions:

1 GB = 1,024 MB

For precise technical communication, the binary units **GiB** and **MiB** can be used to distinguish binary quantities.

Is 1 TB equal to 1,024 GB?

Yes, under the binary-style convention used throughout much everyday computing terminology.

Strictly speaking, the binary equivalent is:

1 TiB = 1,024 GiB

Decimal units use:

1 TB = 1,000 GB

What is the difference between MB and MiB?

MB generally refers to a megabyte, while MiB means mebibyte.

The binary relationship is:

1 MiB = 1,024 KiB = 1,048,576 bytes

The decimal relationship is:

1 MB = 1,000,000 bytes

The distinction matters when precise storage measurements are required.

What is the difference between GB and GiB?

A **GB** is a gigabyte, while a **GiB** is a gibibyte.

A gigabyte uses a decimal definition:

1 GB = 1,000,000,000 bytes

A gibibyte uses a binary definition:

1 GiB = 1,073,741,824 bytes

Why do storage devices show less space than advertised?

The difference can arise from the use of different unit conventions, along with formatting, system files, partitions, recovery data, and other reserved space.

A storage manufacturer may advertise capacity using decimal units while software displays it differently.

How do I convert MB to GB?

Divide MB by 1,024 for the binary-style conversion.

$GB = MB \div 1,024$

For example:

$2,048 MB \div 1,024 = 2 GB$

How do I convert GB to MB?

Multiply GB by 1,024.

$$\text{MB} = \text{GB} \times 1,024$$

For example:

$$5 \text{ GB} \times 1,024 = 5,120 \text{ MB}$$

How do I convert GB to TB?

Divide GB by 1,024.

$$\text{TB} = \text{GB} \div 1,024$$

For example:

$$2,048 \text{ GB} \div 1,024 = 2 \text{ TB}$$

How do I convert TB to GB?

Multiply TB by 1,024.

$$\text{GB} = \text{TB} \times 1,024$$

For example:

$$4 \text{ TB} \times 1,024 = 4,096 \text{ GB}$$

Which is bigger, MB or GB?

GB is larger than MB.

One GB contains approximately 1,024 MB under the binary-style convention.

The order is:

$$\text{KB} < \text{MB} < \text{GB} < \text{TB} < \text{PB}$$

Which is bigger, GB or TB?

TB is larger than GB.

One TB contains approximately 1,024 GB under the binary-style convention.

What comes after TB?

The larger commonly named units are:

$$\text{TB} \rightarrow \text{PB} \rightarrow \text{EB} \rightarrow \text{ZB} \rightarrow \text{YB}$$

That means:

- TB = Terabyte
- PB = Petabyte
- EB = Exabyte
- ZB = Zettabyte
- YB = Yottabyte

Printable File Size Conversion Reference

Small Units

$$1 \text{ KB} = 1,024 \text{ bytes}$$

$$1 \text{ MB} = 1,024 \text{ KB}$$

$$1 \text{ GB} = 1,024 \text{ MB}$$

$$1 \text{ TB} = 1,024 \text{ GB}$$

Larger Units

$$1 \text{ PB} = 1,024 \text{ TB}$$

$$1 \text{ EB} = 1,024 \text{ PB}$$

$$1 \text{ ZB} = 1,024 \text{ EB}$$

$$1 \text{ YB} = 1,024 \text{ ZB}$$

Conversion Direction

Small → Large: Divide by 1,024

Large → Small: Multiply by 1,024

One-Page File Size Cheat Sheet

Unit	Binary-style equivalent
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1 KB	1,024 B
1 MB	1,024 KB
1 GB	1,024 MB
1 TB	1,024 GB
1 PB	1,024 TB
1 EB	1,024 PB
1 ZB	1,024 EB
1 YB	1,024 ZB

Remember

1,024 B → 1 KB
 1,024 KB → 1 MB
 1,024 MB → 1 GB
 1,024 GB → 1 TB
 1,024 TB → 1 PB

Final Quick Reference

If you remember only five conversions, remember these:

Question	Answer
1 KB equals how many bytes?	1,024 bytes
1 MB equals how many KB?	1,024 KB
1 GB equals how many MB?	1,024 MB
1 TB equals how many GB?	1,024 GB
1 PB equals how many TB?	1,024 TB

 **The simplest rule:** When moving from a smaller unit to a larger unit, divide by 1,024. When moving from a larger unit to a smaller unit, multiply by 1,024.

File Size Conversion Chart — KB, MB, GB, TB & Digital Storage Units.

Reference guide for digital storage and file-size conversions.

Online reference: <https://tg.shinecap.co.in/post/other-posts/file-size-conversion-chart.php>

Note: File-size terminology and displayed capacities can vary between decimal and binary conventions. For precise technical work, check whether the source uses SI units (kB, MB, GB, TB) or IEC binary units (KiB, MiB, GiB, TiB).

For More Tools & Guides – Visit <https://tg.shinecap.co.in>