

Why does a 16GB optical module only have 14GB of storage



Article Overview

A 16GB optical module only delivers about 14GB of effective storage because protocol encoding and transmission overhead reduce the usable data rate.

Technical Explanation

Optical modules, such as those used in 16G Fibre Channel (16GFC) networks, are rated nominally at 16 gigabits per second (Gbps), but the actual line rate is 14.025 Gbps due to the encoding scheme used for data transmission. Early Fibre Channel standards (1G, 2G, 4G, 8G) used 8B/10B encoding, which inserts extra bits to maintain signal integrity. For 16GFC, the standard switched to 64B/66B encoding, which is more efficient but still introduces a small overhead. This means that although the module is called "16G," the effective throughput is slightly lower, around 14 Gbps.

How Encoding Affects Usable Capacity

- 8B/10B encoding: Each 8 bits of data is transmitted as 10 bits, resulting in 20% overhead.
- 64B/66B encoding: Each 64 bits of data is transmitted as 66 bits, reducing overhead to about 3%, but still slightly lowering the effective data rate compared to the nominal 16G. This overhead is necessary to ensure signal integrity, clock recovery, and error detection during high-speed optical transmission. As a result, the module cannot deliver the full 16GB of data per second, and the effective usable capacity is closer to 14GB.

Article Content

M.2 SSD only showing 14gb? I've tested in both external USB 3.0 and ...

Drive 2 - Samsung Evo 500gb - Only reading 73gb and saying Intel drive, not Samsung. I've purchased a ZTC external

Why does my disk drive show 14.6GB instead of 16GB?

When your disk drive shows a capacity of 14.6GB instead of the expected 16GB, this discrepancy is quite common and can be

16 gb flash drive, only 14 gb usable

So in a 16GB Flash drive, you get around 14830MB~14.8GB. Some of the space is used up for cache and encryption

The Case of the Missing Gigabytes: Why is Only 14GB Out of 16GB ...

The mystery deepens. Why, oh why, are those gigabytes still missing? This isn't a glitch, a manufacturing defect, or

Why does my USB have less space than it says?

When you buy a new USB drive, you expect it to have the full amount of storage space listed on the package.

Why a 16GB Pendrive Shows Less Storage

Plugged in a 16GB pendrive but your computer only shows around 14-15GB?

Why does my 16GB SD card only have 14 GB?

Why does my 16GB SD card only have 14 GB? So in a 16GB Flash drive, you get around 14830MB~14.8GB. Some of the space is

Pen drive showing 14.9 GB only

i have a 16 GB Soni pen drive. when i was inset to the computer it's showing 14.9 GB only but there is nothing inside

I have a 16GB Firebird USB and the actual size on disk is only 14.9GB

Hi all, When I format my usb disk, all i can get is 14.9GB. Is it normal? and one more thing. I tried to format it as a

I've got 16gb of ram, but only 14.2gb is usable. help

can somebody help me find out why i only havce 14.2gb of ram thats usable? It used to be 16gb, but for some reason

16Gb Pendrive Showing 14Gb, Why My Pendrive is Showing Less

Did you know that a disk can only store a certain amount of data before it starts to errors? This video is designed to

Why is my USB showing wrong size after format?

Many users experience an issue where a USB flash drive shows less available storage space than its advertised

My sandisk ultra 3.0 out of 16gb it is showing only 14.4 gb as usage ...

Dear Sandisk, can i know why my sandisk ultra is showing 14.4 gb as usage space as im losing 1.6 gb please say how

My ADATA USB is missing its full capacity of 16 GB, only showing

I have a new usb pen 16 GB drive from ADATA, model UV100F. When I plugged it in, it shows only 14.4. GB of space.

16Gb Pendrive Showing 14Gb, Why My Pendrive is Showing Less

This video is designed to help you understand how your storage space works and how to maximize it. We'll also

16gb microSD shows 14.8gb only

I bought 16gb microsd from kingston, sadly it shows only less than 15gb on my DS 14.8 to be exact Rom is fallout.

Why does my disk drive show 14.6GB instead of 16GB?

In summary, the capacity you see is a result of how storage is calculated, formatted, and reserved. It's completely normal for a 16GB

16GB memory card, ive used 2GB and yet have 14GB of free space,

I don't see how I need to do that anyway as I've only used up 2gb on sd and yet have 14gb I can use but why is it saying low on

SFP Optical Module Specifications: Standards & Performance

A practical guide to SFP Optical Module Specifications, covering data rates, optical budget, Tx/Rx power, DDM/DOM, standards, and

Intel optane 13.4 GB not 16? And other problems.

The module uses a small portion of memory media management and maintenance. The listed density of 16 GB and

Why is the optical module rate 14.025 Gbps for 16G FC and 28

The first thing to understand is: (X)G FC is the data category of Fiber Channel, so the data category used for storage

Why Do Storage Drives Show Less Space Than Specified When

Drives show less space than advertised because Windows counts storage in binary, where 1 GB is 1024 MB, while

Contact Us

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