Linux EXT2 or EXT3 Formatting Causes Specific RDX Media Performance to Drop

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Problem

RDX media with the new SMR type of hard disk drives (HDDs) that is used in a Linux environment can take an extremely long time to format with EXT2 or EXT3. Formatting time is more pronounced in multi-terabyte disks. However, formatting with EXT4 takes only a seconds.

Description

Formatting examples of a 2 TB cartridge in a SATA III RDX drive using Windows Server 2016 OS:

- EXT4 took 17 seconds
- EXT3 took 2 hours 49 minutes
- EXT2 took 3 hours 9 minutes with a data transfer rate of around 35 K/s.

Similar results were found using just the bare HDD indicating the issue is not with the RDX media but the HDD.

Solution

The problem lies with Shingled Magnetic Recording (SMR) used in recent hard disk drives to increase storage density and storage capacity and to control the unique Write/Read technology with a large cache area. SMR HDDs cause a huge write/read performance decrease when formatted as EXT2 or EXT3.

Customers should use EXT4 or a format newer than EXT3 in a Linux environment for the best performance.

IMPORTANT: When you change the formatting from EXT2 or EXT3 to either NTFS or EXT4, it can take at least two hours of normal write operations before the usual write/read performance is seen with your RDX system.

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