**Are your disks formatted with UseLargeFRS?**

**18 OCT 2017 • 3 mins read about powershell and sql**

**FROM:** [**https://www.codykonior.com/2017/10/18/are-your-disks-formatted-with-uselargefrs/**](https://www.codykonior.com/2017/10/18/are-your-disks-formatted-with-uselargefrs/)

[PureStorage has a pretty cool post](https://support.purestorage.com/Solutions/Microsoft_Platform_Guide/Microsoft_SQL_Server/Microsoft_SQL_Server_Quick_Reference) that mentions the importance of formatting SQL Server disks with a 64KB clusters and the /L flag (also known as the UseLargeFRS switch on PowerShell's Format-Volume cmdlet).

Why UseLargeFRS? It's to help avoid DBCC CHECKDB [failures on large/busy databases](https://support.microsoft.com/en-ie/help/2002606/os-errors-1450-and-665-are-reported-for-database-data-files). But how do you work out whether it's enabled or not? PowerShell to the rescue!

You can't work this out remotely but you can do it locally.

Get-CimInstance Win32\_Volume | ForEach-Object {

$fsutil = &fsutil fsinfo ntfsinfo $\_.Name

$fsutil = $($fsutil -join ",$([Environment]::NewLine)" -replace '(.\*?)\s\*:\s\*([^,]\*)(,\*)', '"$1" : "$2"$3')

$fsutil = ConvertFrom-Json "{ $fsutil }" | Add-Member -MemberType NoteProperty -Name Name -Value $\_.Name -PassThru

if ($fsutil.'Bytes Per Cluster' -ne "65536") {

"Fail: $($\_.Name) Bytes Per Cluster not formatted to 64K"

}

if ($fsutil.'Bytes Per FileRecord Segment' -ne 4096) {

"Fail: $($\_.Name) Large FRS not enabled"

}

}

Some blog posts have said that you MUST use 64K clusters in order to UseLargeFRS to take effect, but I don't think this is true. I did some testing of formatting with different values to see what would come out.

# Default

Format-Volume D

&fsutil fsinfo ntfsinfo D:

NTFS Volume Serial Number : 0xca86beb886bea47b

NTFS Version : 3.1

LFS Version : 2.0

Number Sectors : 0x000000000fdbefff

Total Clusters : 0x0000000001fb7dff

Free Clusters : 0x0000000001fb1250

Total Reserved : 0x0000000000000000

Bytes Per Sector : 512

Bytes Per Physical Sector : 4096

Bytes Per Cluster : 4096

Bytes Per FileRecord Segment : 1024

Clusters Per FileRecord Segment : 0

Mft Valid Data Length : 0x0000000000040000

Mft Start Lcn : 0x00000000000c0000

Mft2 Start Lcn : 0x0000000000000002

Mft Zone Start : 0x00000000000c0000

Mft Zone End : 0x00000000000cc820

Resource Manager Identifier : F81166FD-B030-11E7-80B8-00155D01C214

I've marked non-default changes in red.

# 64K clusters only

Format-Volume D -AllocationUnitSize 65536

&fsutil fsinfo ntfsinfo D:

NTFS Volume Serial Number : 0xf41aca091ac9c8b6

NTFS Version : 3.1

LFS Version : 2.0

Number Sectors : 0x000000000fdbefff

Total Clusters : 0x00000000001fb7df

Free Clusters : 0x00000000001fb15d

Total Reserved : 0x0000000000000000

Bytes Per Sector : 512

Bytes Per Physical Sector : 4096

Bytes Per Cluster : 65536

Bytes Per FileRecord Segment : 1024

Clusters Per FileRecord Segment : 0

Mft Valid Data Length : 0x0000000000010000

Mft Start Lcn : 0x000000000000c000

Mft2 Start Lcn : 0x0000000000000001

Mft Zone Start : 0x000000000000c000

Mft Zone End : 0x000000000000cca0

Resource Manager Identifier : F81166CF-B030-11E7-80B8-00155D01C214

# 64K clusters and UseLargeFRS

Format-Volume D -AllocationUnitSize 65536 -UseLargeFRS

&fsutil fsinfo ntfsinfo D:

NTFS Volume Serial Number : 0x3694f89994f85cb5

NTFS Version : 3.1

LFS Version : 2.0

Number Sectors : 0x000000000fdbefff

Total Clusters : 0x00000000001fb7df

Free Clusters : 0x00000000001fb150

Total Reserved : 0x0000000000000000

Bytes Per Sector : 512

Bytes Per Physical Sector : 4096

Bytes Per Cluster : 65536

Bytes Per FileRecord Segment : 4096

Clusters Per FileRecord Segment : 0

Mft Valid Data Length : 0x0000000000100000

Mft Start Lcn : 0x000000000000c000

Mft2 Start Lcn : 0x0000000000000001

Mft Zone Start : 0x000000000000c000

Mft Zone End : 0x000000000000cca0

Resource Manager Identifier : F81166E1-B030-11E7-80B8-00155D01C214

# UseLargeFRS only

Format-Volume D -UseLargeFRS

&fsutil fsinfo ntfsinfo D:

NTFS Volume Serial Number : 0x42480af6480ae88d

NTFS Version : 3.1

LFS Version : 2.0

Number Sectors : 0x000000000fdbefff

Total Clusters : 0x0000000001fb7dff

Free Clusters : 0x0000000001fb118f

Total Reserved : 0x0000000000000000

Bytes Per Sector : 512

Bytes Per Physical Sector : 4096

Bytes Per Cluster : 4096

Bytes Per FileRecord Segment : 4096

Clusters Per FileRecord Segment : 1

Mft Valid Data Length : 0x0000000000100000

Mft Start Lcn : 0x00000000000c0000

Mft2 Start Lcn : 0x0000000000000002

Mft Zone Start : 0x00000000000c0000

Mft Zone End : 0x00000000000cc820

Resource Manager Identifier : F81166E7-B030-11E7-80B8-00155D01C214