

Configuring an iDRAC vFlash partition as a datastore in VMware ESXi

A Dell Technical White paper

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Disclaimer:

This paper explores a way of exposing iDRAC vFlash partition to ESXi to use it as a datastore. However VMware officially don't support FAT16 filesystem.

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Introduction

This paper talks about configuration steps to make an iDRAC vFlash partition as a datastore in VMware ESXi.

What's Dell iDRAC vFlash?

The vFlash SD card is a Secure Digital (SD) card that plugs into vFlash SD card slot in the system. On latest Dell PowerEdge 12G servers, vFlash supports a maximum of 16GB SD card size.

vFlash is emulated as a USB device. A maximum of 16 partitions can be created on the vFlash SD card and these partitions can be exposed to system as floppy drive, hard drive or CD/DVD drive depending upon the emulation type selected.

NOTE: vFlash is a licensed feature.

Creating iDRAC vFlash partition

From iDRAC7 Web interface, go to Overview → Server → vFlash section.

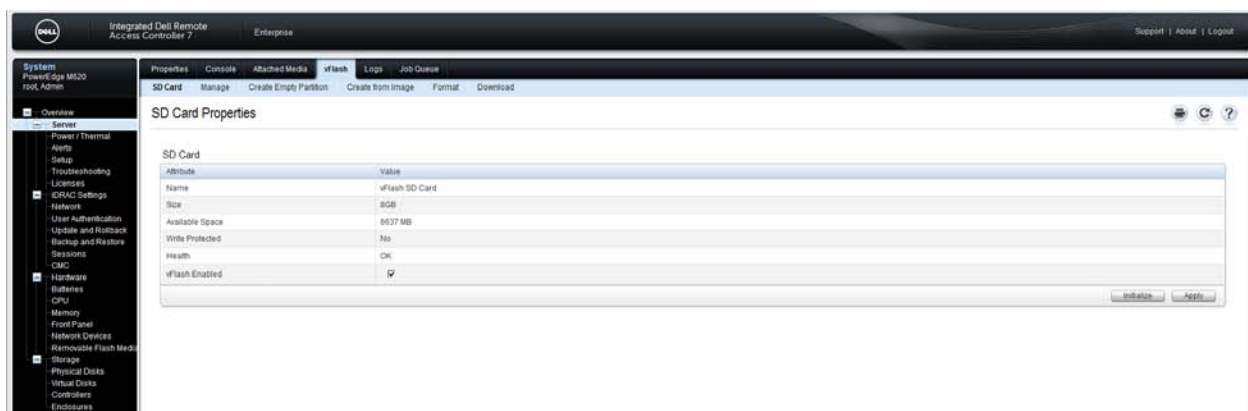


Figure 1 : vFLASH SD card properties

Before creating a partition, it's required to initialize and enable vFlash. This can be achieved from the 'SD Card Properties' section in iDRAC webpage as displayed above. Now create a partition in vFlash by traversing to 'Create Empty Partition' tab as below.

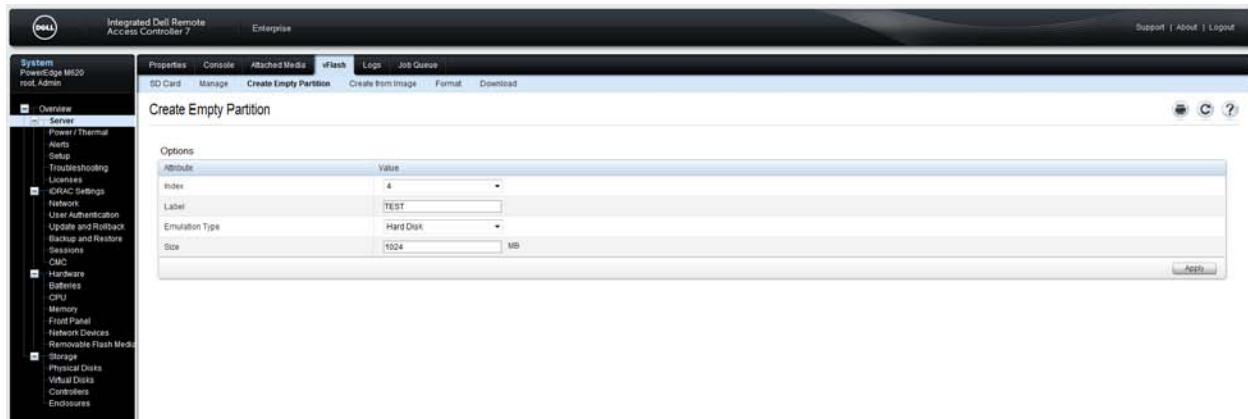


Figure 2 : Creating a partition

Traverse to 'Manage' tab and uncheck the 'Read-Only' checkbox. The next step is to format the SD card by traversing to 'Format' tab. Provide a user understandable Label and choose a FAT16 format type. Apply the settings.



Figure 3 : Format the partition created

Now the next step is to attach the vFlash partition to ESXi. Before attaching the iDRAC vFlash partition, stop usbarbitrator service to make the USB device available to ESXi console.

```
~# /etc/init.d/usbarbitrator stop
```

Note:- Disable usbarbitrator permanently if the iDRAC vFlash USB storage device needs to be available across reboot. **However halting/disabling usb-arbitrator service will cease the usb passthrough functionality to VMs.**

```
~# chkconfig usbarbitrator off
```

Go to the 'Manage' tab of iDRAC web interface and click the 'Attached' check box to make the partition attached. Apply the settings.



Figure 4 : Attach the partition

Configuring iDRAC vFlash partition as a datastore

Once the partition is attached from iDRAC UI, perform the following to make it available as a datastore.

1. Using *esxcli storage core adapter list* or *esxcfg-scsidevs -l* command; identify the vmhba adapter created for the iDRAC vFlash USB storage device as below
For example:-

esxcfg-scsidevs -l command shows an output similar to the below.

```
mpx.vmhba41:C0:T0:L0
Device Type: Direct-Access
Size: 1024 MB
Display Name: Local USB Direct-Access (mpx.vmhba41:C0:T0:L0)
Multipath Plugin: NMP
Console Device: /vmfs/devices/disks/mpx.vmhba41:C0:T0:L0
Devfs Path: /vmfs/devices/disks/mpx.vmhba41:C0:T0:L0
Vendor: iDRAC Model: TEST Revis: 0329
SCSI Level: 2 Is Pseudo: false Status: on
Is RDM Capable: false Is Removable: true
Is Local: true Is SSD: false
Other Names:
    vml.0000000000766d68626134313a303a30
VAAI Status: unsupported
~ #
```

2. Using fdisk / parted utility change the partition ID of the USB device vmhbaX adapter to 0x6 (FAT16).

Even if the iDRAC vFlash partition is formatted as FAT16, it reports the partition ID as '83'.

```
~ # fdisk -l

Disk /dev/disks/mpx.vmhba41:C0:T0:L0: 1073 MB, 1073741824 bytes
128 heads, 1 sectors/track, 16384 cylinders
Units = cylinders of 128 * 512 = 65536 bytes

    Device Boot      Start         End      Blocks   Id  System
/dev/disks/mpx.vmhba41:C0:T0:L0p1        1         16384     1048575+  83  Linux
Found valid GPT with protective MBR; using GPT
```

Change the partition ID to 0x6 as below

```
~ # fdisk /dev/disks/mpx.vmhba41\C0\T0\L0

Disk /dev/disks/mpx.vmhba41:C0:T0:L0: 1073 MB, 1073741824 bytes
128 heads, 1 sectors/track, 16384 cylinders
Units = cylinders of 128 * 512 = 65536 bytes

    Device Boot      Start         End      Blocks   Id  System
/dev/disks/mpx.vmhba41:C0:T0:L0p1        1         16384     1048575+  83  Linux

Command (m for help): t
Selected partition 1
Hex code (type L to list codes): 6
Changed system type of partition 1 to 6 (FAT16)

Command (m for help): p

Disk /dev/disks/mpx.vmhba41:C0:T0:L0: 1073 MB, 1073741824 bytes
128 heads, 1 sectors/track, 16384 cylinders
Units = cylinders of 128 * 512 = 65536 bytes

    Device Boot      Start         End      Blocks   Id  System
/dev/disks/mpx.vmhba41:C0:T0:L0p1        1         16384     1048575+   6  FAT16

Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table
~ #
```

3. Configure the vFlash partition as a datastore using the below command.

```
~# esxcli storage filesystem automount
```

Checking the settings

Using one of the below commands, it can be seen that the partition is attached to ESXi.

```
~# df -h
Filesystem      Size  Used Available Use% Mounted on
vfat            1023.7M  0.0B   1023.7M   0% /vmfs/volumes/TEST

~ # ls -l /vmfs/volumes/
lrwxr-xr-x      1 root      root      22 Feb 15 09:40 TEST ->
mpx.vmhba41:C0:T0:L0:1
drwxr-xr-x      1 root      root      8 Jan  1 1970
mpx.vmhba41:C0:T0:L0:1
```

Detaching datastore

If the vFlash partition is detached from ESXi, it's required to manually do a rescan to remove the dead links created as below

```
~ # esxcli storage filesystem rescan
```