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Linux Find Out Video Card GPU Memory RAM Size Using Command Line

Author: Vivek Gite • Last updated: April 12, 2024 • [37 comments](#)

I have a quick question for you, Vivek: I'm trying to find out my NVIDIA display card memory size on Fedora Linux. How do I find out my VIDEO Card (VGA) Memory size on Linux?



You need to use the following commands to find out graphics card (VGA) memory on Linux:

1. **lspci command** – It is a utility for displaying information about all PCI buses

in the system and all devices connected to them



3. **lshw command** – List CPU, CPU and other hardware on Linux.
4. **glxinfo command** – See information about the GLX implementation on Linux on a given X display.
5. **nvidia-smi command** – Display NVIDIA GPU info including installed RAM.
6. [nvtop command](#) – Linux task monitor for Nvidia, AMD, Apple, Adreno, Ascend and Intel GPUs

Tutorial details	
Difficulty level	Easy
Root privileges	Yes
Requirements	Linux terminal
Category	Driver Management
OS compatibility	AlmaLinux • Alpine • Arch • Debian • Fedora • Linux • Mint • openSUSE • Pop!_OS • RHEL • Rocky • Stream • SUSE • Ubuntu
Est. reading time	3 minutes



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First, download a new version of the PCI ID list to get accurate info from PCI devices. For example, Open a terminal and run the update-pciids command as follows:

```
$ sudo update-pciids
```

Outputs:



Driver Support



Begin Update of Drivers

Download

[sudo] password for vivek:

% Total	% Received	% Xferd	Average	Speed	Time	Time	Time	Current
			Dload	Upload	Total	Spent	Left	Speed
100	287k	100	287k	0	0	94325	0	0:00:03 0:00:03 --:--:-- 94325

Done.

Next, type the [lspci command to list PCI devices on Linux](#):

```
$ lspci
```

Output:



```
00:1d.1 USB Controller: Intel Corporation 82801DB/DBL/DBM (ICH4/I
00:1d.2 USB Controller: Intel Corporation 82801DB/DBL/DBM (ICH4/I
00:1d.7 USB Controller: Intel Corporation 82801DB/DBM (ICH4/ICH4-
00:1e.0 PCI bridge: Intel Corporation 82801 PCI Bridge (rev 82)
00:1f.0 ISA bridge: Intel Corporation 82801DB/DBL (ICH4/ICH4-L) L
00:1f.1 IDE interface: Intel Corporation 82801DB (ICH4) IDE Contr
00:1f.3 SMBus: Intel Corporation 82801DB/DBL/DBM (ICH4/ICH4-L/ICH
00:1f.5 Multimedia audio controller: Intel Corporation 82801DB/DB
01:00.0 Network controller: RaLink RT2561/RT61 rev B 802.11g
01:02.0 Multimedia video controller: Brooktree Corporation Bt878
01:02.1 Multimedia controller: Brooktree Corporation Bt878 Audio
01:05.0 Ethernet controller: Realtek Semiconductor Co., Ltd. RTL-
```

Driver Support

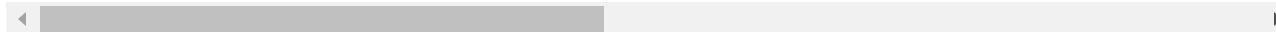
Begin Update of Drivers

You need to use string called devices in the specified domain – 00:02.0 VGA
(highlighted in red color to display memory info):

```
$ lspci -v -s 00:02.0
```

Sample outputs:

```
00:02.0 VGA compatible controller: Intel Corporation 82845G/GL[Br  
Subsystem: Giga-byte Technology Unknown device 2562  
Flags: bus master, fast devsel, latency 0, IRQ 177  
Memory at d0000000 (32-bit, prefetchable) [size=128M]  
Memory at d8200000 (32-bit, non-prefetchable) [size=512K]  
Capabilities:
```



This listing shows an Intel video card with 128 MB of video RAM. If you cannot find devices in the specified domain use following command and look for your display card name and memory field:

```
$ lspci -v | less
```

Simply run the following lshw command. It is a small tool to [extract detailed information on the hardware configuration of the Linux machine](#):

```
$ sudo lshw -C display
```



Linux Find Out Video Card GPU Memory RAM Size Using Command Line

Another option is to run the following command:


```
$ glxinfo | more
```

One can use the [egrep command](#) or [grep command](#) as follows to filter out info:

```
✓ $ glxinfo | grep -E -i 'device|memory'
```


Finding out video card GPU memory RAM size on Linux for NVIDIA card

Here is another output displaying Nvidia GPU memory on Arch Linux:



```
$ glxinfo | grep -E -i 'device|memory|video'
```

```
GLX_NV_multigpu_context, GLX_NV_robustness_video_memory_purge,  
GLX_SGI_video_sync  
GLX_NV_robustness_video_memory_purge, GLX_NV_swap_group,  
GLX_SGI_video_sync  
GLX_NV_multigpu_context, GLX_NV_robustness_video_memory_purge,  
GLX_SGI_video_sync  
Memory info (GL_NVX_gpu_memory_info):  
Dedicated video memory: 4096 MB  
Total available memory: 4096 MB  
Currently available dedicated video memory: 3300 MB  
GL_EXT_import_sync_object, GL_EXT_memory_object, GL_EXT_memory_object_fd,
```

To get summary i.e. brief info run:

✓ `$ glxinfo -B`

```
name of display: :0
display: :0 screen: 0
direct rendering: Yes
Extended renderer info (GLX_MESA_query_renderer):
    Vendor: X.Org (0x1002)
    Device: Radeon RX 580 Series (POLARIS10 / DRM 3.25.0 / 4.17.14-041714-generic, LLVM
    Version: 18.0.5
    Accelerated: yes
    Video memory: 4058MB
    Unified memory: no
    Preferred profile: core (0x1)
    Max core profile version: 4.5
    Max compat profile version: 3.0
    Max GLES1 profile version: 1.1
    Max GLES[23] profile version: 3.1
Memory info (GL_ATI_meminfo):
    VBO free memory - total: 4058 MB, largest block: 4058 MB
    VBO free aux. memory - total: 4089 MB, largest block: 4089 MB
    Texture free memory - total: 4058 MB, largest block: 4058 MB
    Texture free aux. memory - total: 4089 MB, largest block: 4089 MB
    Renderbuffer free memory - total: 4058 MB, largest block: 4058 MB
    Renderbuffer free aux. memory - total: 4089 MB, largest block: 4089 MB
Memory info (GL_NVX_gpu_memory_info):
    Dedicated video memory: 4058 MB
    Total available memory: 8147 MB
    Currently available dedicated video memory: 4058 MB
OpenGL vendor string: X.Org
OpenGL renderer string: Radeon RX 580 Series (POLARIS10 / DRM 3.25.0 / 4.17.14-041714-g
OpenGL core profile version string: 4.5 (Core Profile) Mesa 18.0.5
OpenGL core profile shading language version string: 4.50
OpenGL core profile context flags: (none)
✓ OpenGL core profile profile mask: core profile
```

OpenGL ES profile version string: OpenGL ES 3.1 Mesa 18.0.5

OpenGL ES profile shading language version string: OpenGL ES GLSL ES 3.10

Xorg log file to get the GPU info on Linux

Open a command-line terminal (select Applications > Accessories > Terminal), and then type:

```
$ grep -i --color memory /var/log/Xorg.0.log
```

Sample outputs:

```
(--) Aug 02 12:16:20 NVIDIA(0): Memory: 1048576 kBytes
```

```
(II) Aug 02 12:16:21 NVIDIA: Using 768.00 MB of virtual memory fo
```

```
(==) NVIDIA(0): Disabling shared memory pixmaps
```



The above output indicate that my Nvidia card has 1024MB ram. The following is taken from my Macbook, which has Intel GM965 Video card. It shares memory from main RAM:

```
$ grep -i memory /var/log/Xorg.0.log
```

Sample outputs:

```
[2318869.434] (II) intel(0): detected 15868 kB stolen memory.
```

```
[2318869.472] (II) intel(0): I830CheckAvailableMemory: 1966080 kB
```

```
✓ [2318869.486] (II) intel(0): Attempting memory allocation with ti
```

```
[2318870.197] (II) intel(0): B0 memory allocation layout:
[2318870.197] (II) intel(0): 0x00f7f000:          start of memo
[2318870.197] (II) intel(0): 0x10000000:          end of memory
```

Related: [Top 7 Linux GPU Monitoring and Diagnostic Commands Line Tools](#)

Using nvidia-smi for monitoring and management capabilities

The `nvidia-smi` command also display used and total GPU memory: ▶

```
$ nvidia-smi
```

Thu May 27 10:57:55 2021

```
+-----+
| NVIDIA-SMI 460.73.01    Driver Version: 460.73.01    CUDA Version: 11.2    |
+-----+-----+
| GPU  Name            Persistence-M| Bus-Id        Disp.A | Volatile Uncorr. ECC |
| Fan  Temp   Perf    Pwr:Usage/Cap|      Memory-Usage | GPU-Util  Compute M. |
|                                       |          MIG M. |
+-----+-----+
|  0  GeForce GTX 165...  Off      | 00000000:01:00.0  On  |                     N/A |
| N/A   49C    P8      3W /  N/A   |  623MiB /  3911MiB |    10%    Default  |
+-----+-----+
|                                       |          N/A  |
```

GPU	GI	CI	PID	Type	Process name	GPU Memory
	ID	ID				Usage
=====						
0	N/A	N/A	2786	G	/usr/lib/xorg/Xorg	100MiB
0	N/A	N/A	4067	G	/usr/lib/xorg/Xorg	263MiB
0	N/A	N/A	4307	G	/usr/bin/gnome-shell	92MiB
0	N/A	N/A	682194	G	...AAAAAAAA= --shared-files	45MiB
0	N/A	N/A	682979	G	/usr/lib/firefox/firefox	1MiB
0	N/A	N/A	683030	G	/usr/lib/firefox/firefox	1MiB
0	N/A	N/A	683091	G	/usr/lib/firefox/firefox	1MiB
0	N/A	N/A	684257	G	...AAAAAAAA= --shared-files	104MiB
+-----+						

How to find out AMD video card GPU memory RAM size on Linux

Open the Terminal app and then execute the following lspci command

```
$ lspci | grep -i VGA
```

Note down AMD PCI GPU ID such as `00:01.0` and then run:

```
$ lspci -vs 00:01.0
```

✓

```
$ lspci -vs 00:01.0 | grep -i -E
```

```
$ grep -i memory /var/log/Xorg.0.log  
$ glxinfo | grep -E -i 'device|memory'
```

Outputs for my AMD/ATI] Kabini [Radeon HD 8330] card obtained using the lspci command and [grep command](#)/[egrep command](#):

✓ Using the [nvidia-smi](#) command


```
$ sudo apt install nvidia-top
# OR #
$ sudo dnf install nvidia-top
```

Now run it:

```
$ nvidia-top
```

Click to enlarge



You must use combination of various Linux commands to find out video card (GPU) memory (RAM) size and make of card. I strongly suggest that you read the following man pages using the [help command](#) or [man command](#):

```
$ man glxinfo  
$ man lspci  
$ man lshw
```

This entry is **6 of 7** in the **Nvidia Linux and Unix GPU Tutorial** series. Keep reading the rest of the series:

1. [Ubuntu Linux Install Nvidia Driver \(Latest Proprietary Driver\)](#)
2. [How to install Nvidia driver on CentOS 7 Linux](#)
3. [Find the NVIDIA cuda version](#)
4. [Install FFmpeg with NVIDIA GPU acceleration on Linux](#)
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I'm Vivek Gite, and I write [about](#) Linux, macOS, Unix, IT, programming, infosec, and open source. Subscribe to my [RSS feed](#) or [email newsletter](#) for updates.

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onni • May 22, 2015 @ 11:51

thanks very much!!!

↩ ∞

steve • Jul 12, 2021 @ 15:15

So I was gifted this computer from a friend and still learning my way around Linux and poweruser stuff in general. When I followed the lspci route, it gave me three outputs:

Memory at ee000000 (32-bit, non-prefetchable) [size=16M]

Memory at e0000000 (64-bit, prefetchable) [size=128M]

Memory at e8000000 (64-bit, prefetchable) [size=32M]

So I don't know what the difference is between prefetchable or not, but the article seemed to imply the "prefetchable" one was how much memory the graphics card had, but this one lists two. Does that mean the graphics card uses both somehow? Is my memory 128, 32, or the total of both in this case?

↩ ∞



```
grep -i --color memory /var/log/Xorg.0.log
```

↩ ∞

crt0mega • Dec 29, 2022 @ 14:54

```
echo $(( $(</sys/class/drm/card0/device/mem_info_vram_total) / 10485
```



↩ ∞

Anonymous • Dec 29, 2022 @ 15:48

Good article but you need to stop calling your graphics card as VGA we are almost into 2023 now

↩ ∞

jelabarre • Mar 2, 2023 @ 2:51

The "lspci" command definitely didn't give me correct information. I just put a 1G

✓ GeForce GT 710 in a machine and "lspci -v -s 01:00.0" was telling me I had



 **Vivek Gite** • Mar 2, 2023 @ 6:29

Please update pci database:

```
sudo update-pciids
```


Try lspci again. What about other commands? Did you try lshw?



MHMX • Apr 12, 2024 @ 11:55

I can't see a way to check for shared main RAM on AMD igpu – if we don't have a desktop and hence no xorg installed/running.



 **Vivek Gite** • Apr 12, 2024 @ 20:11

Install nvidia-smi and you can see it memory usage.



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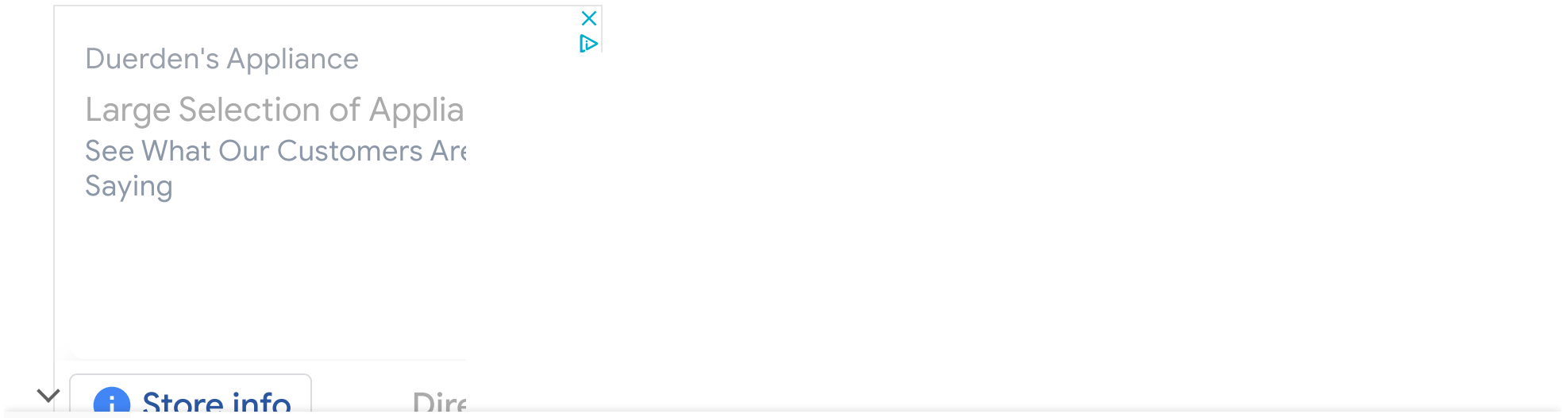
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Name

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