



Escritorios virtuales y 3D

mxGPU en hipervisores linux KVM



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3D?

Buscamos una solución
para usar aplicaciones comerciales sobre **windows**
virtualización de escritorios
usando **software libre** (Qemu-kVM)

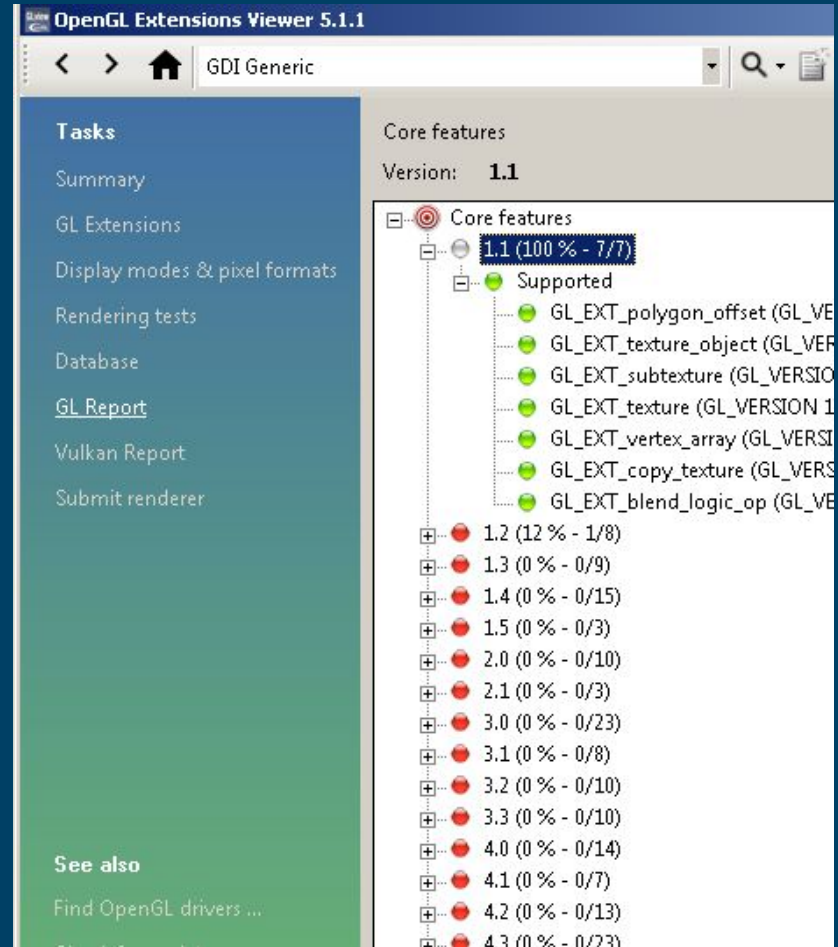
QXL: paravirtual graphics driver

```
<video>  
<model type="qxl" ram="65536" vram="65536" heads="1"/>  
<alias name="video0"/>  
<address type="pci" domain="0x0000" bus="0x00" slot="0x02" function="0x0"/>  
</video>
```



QXL Sólo 2D

Aunque para uso docente hay software que puede usar 3D usando CPU (Solid Works, SketchUp...)



The screenshot shows the OpenGL Extensions Viewer 5.1.1 interface. The title bar reads "OpenGL Extensions Viewer 5.1.1". The main window is titled "GDI Generic". On the left, there is a "Tasks" sidebar with options: Summary, GL Extensions, Display modes & pixel formats, Rendering tests, Database, GL Report, Vulkan Report, and Submit renderer. The main area displays "Core features" with "Version: 1.1". A tree view shows "Core features" expanded to "1.1 (100% - 7/7)", which is further expanded to "Supported". Under "Supported", several extensions are listed with green status icons: GL_EXT_polygon_offset (GL_VE), GL_EXT_texture_object (GL_VEF), GL_EXT_subtexture (GL_VERSIO), GL_EXT_texture (GL_VERSION 1), GL_EXT_vertex_array (GL_VERSI), GL_EXT_copy_texture (GL_VERS), and GL_EXT_blend_logic_op (GL_VE). Below this, a list of other core versions is shown with red status icons and their respective support counts: 1.2 (12% - 1/8), 1.3 (0% - 0/9), 1.4 (0% - 0/15), 1.5 (0% - 0/3), 2.0 (0% - 0/10), 2.1 (0% - 0/3), 3.0 (0% - 0/23), 3.1 (0% - 0/8), 3.2 (0% - 0/10), 3.3 (0% - 0/10), 4.0 (0% - 0/14), 4.1 (0% - 0/7), 4.2 (0% - 0/13), and 4.3 (0% - 0/23). At the bottom left, there is a "See also" section with the link "Find OpenGL drivers ...".

Virgil 3D

use the capabilities of the host GPU to accelerate
3D rendering

```
<graphics type='spice'>  
  <listen type='none' />  
  <gl enable='yes' />  
</graphics>  
<video>  
  <model type='virtio' />  
</video>
```

```
root@fedora ~# dmesg | grep '\[drm\]'  
[drm] Initialized drm 1.1.0 20060810  
[drm] pci: virtio-vga detected  
[drm] virgl 3d acceleration enabled
```

```
root@fedora ~# glxinfo | grep ^OpenGL  
OpenGL vendor string: Red Hat  
OpenGL renderer string: Gallium 0.4 on virgl  
OpenGL core profile version string: 3.3  
                    (Core Profile) Mesa 12.0
```

Virgl 3D

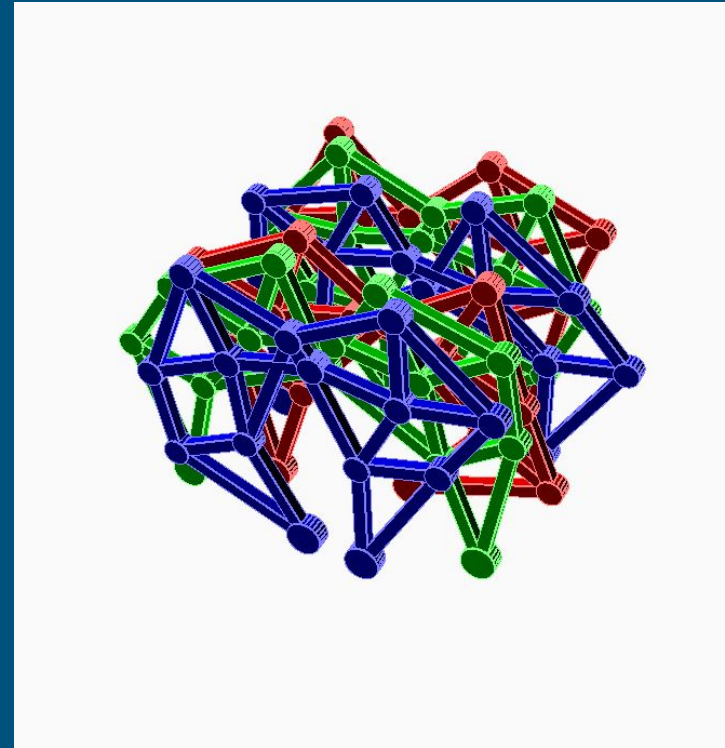
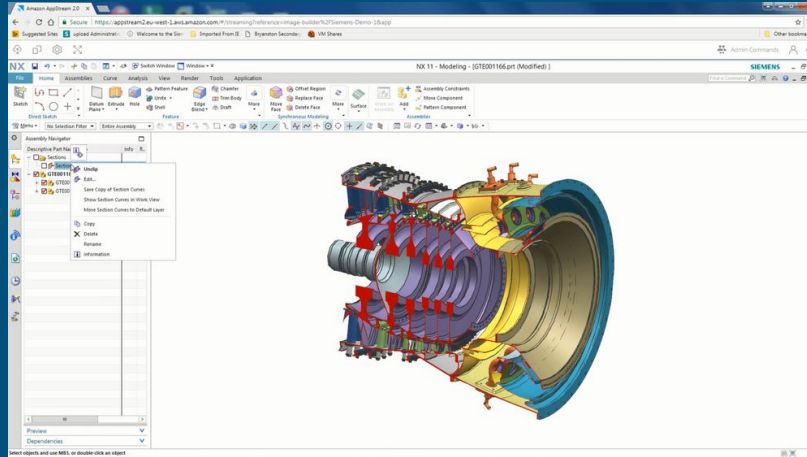
Sólo Linux

Windows (work in progress...)



¿Entornos exigentes 3D?

Autocad / SolidWorks / Siemens NX / Blender / Catia / Revit ...

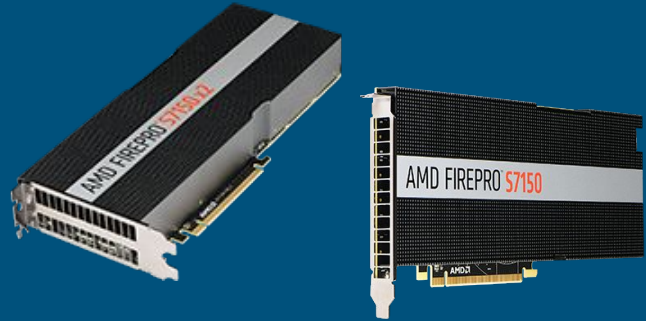


Virtualización de las GPU



NVIDIA®

Nvidia GRID



AMD

AMD FirePro 7150

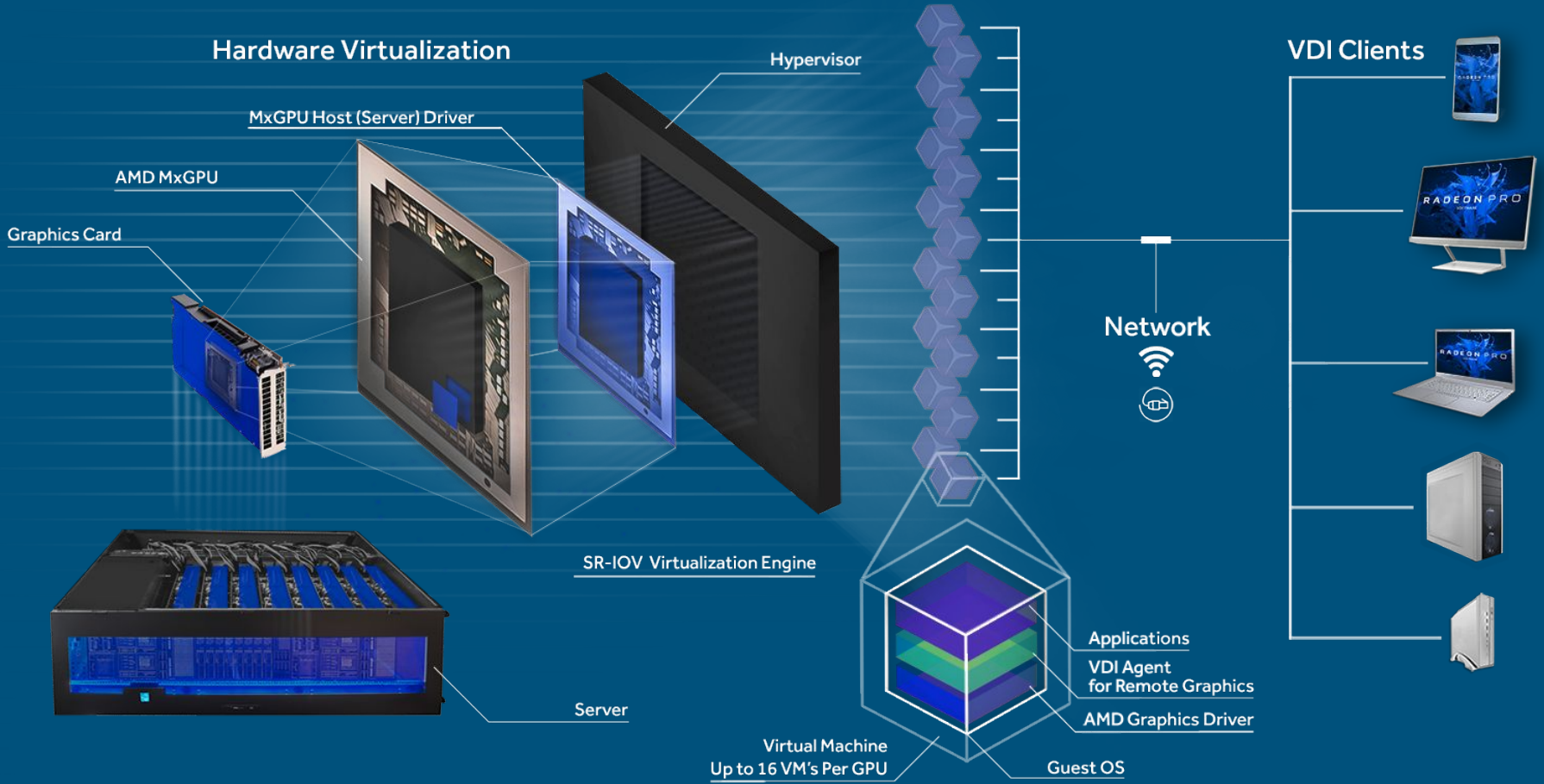
Solución NVIDIA GRID

Coste por puesto de trabajo elevado:

- Elevado coste por tarjeta
- Licenciamiento anual o de por vida
- Reserva dinámica de recursos (software)

Solución AMD Firepro 7150

- **SR-IOV** (reserva de hardware por virtual desktop)
- Sin licencias por usuario
- Coste más reducido por tarjeta (sólo 2 modelos)
- Menos probada y menos implementada



<https://pro.radeon.com/en/virtualized-graphics-open-source/>

R

5 Details About GIM Open Source
Open-Source KVM Host OS Driver for Enterprises and Cloud Service Providers

RADEON PRO Software
Virtualized Graphics

5 Zero MxGPU Per-User Instance Fees

1 GIM Can be Tailored to Your Production Environment

4 For Enterprises and Cloud Service Providers

2 Available on GitHub

3 Reiterates AMD's Commitment to Open-Source Solutions

Open Source

AMD

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Code

Issues 4

Pull requests 1

Projects 1

Wiki

Insights

No description, website, or topics provided.

2 commits

1 branch

0 releases

2 contributors

Branch: master

New pull request

Create new file

Upload files

Find file

Clone or download

firstbread The open source GIM-1.0 release

Latest commit 534694c on Jul 21, 2017

docs	The open source GIM-1.0 release	10 months
drv	The open source GIM-1.0 release	10 months
patch	The open source GIM-1.0 release	10 months
README.md	The open source GIM-1.0 release	10 months
gim.sh	The open source GIM-1.0 release	10 months

README.md

GIM

```
#lspci
```

```
[...]
```

```
02:00.0 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI] Tonga XT GL [FirePro S7150]
```

```
02:02.0 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI] Tonga XTV GL [FirePro S7150V]
```

```
02:02.1 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI] Tonga XTV GL [FirePro S7150V]
```

```
02:02.2 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI] Tonga XTV GL [FirePro S7150V]
```

```
02:02.3 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI] Tonga XTV GL [FirePro S7150V]
```

```
02:02.4 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI] Tonga XTV GL [FirePro S7150V]
```

```
02:02.5 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI] Tonga XTV GL [FirePro S7150V]
```

```
02:02.6 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI] Tonga XTV GL [FirePro S7150V]
```

```
02:02.7 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI] Tonga XTV GL [FirePro S7150V]
```

```
02:03.0 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI] Tonga XTV GL [FirePro S7150V]
```

```
02:03.1 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI] Tonga XTV GL [FirePro S7150V]
```

```
02:03.2 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI] Tonga XTV GL [FirePro S7150V]
```

```
02:03.3 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI] Tonga XTV GL [FirePro S7150V]
```

```
02:03.4 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI] Tonga XTV GL [FirePro S7150V]
```

```
02:03.5 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI] Tonga XTV GL [FirePro S7150V]
```

```
02:03.6 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI] Tonga XTV GL [FirePro S7150V]
```

```
02:03.7 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI] Tonga XTV GL [FirePro S7150V]
```

```
[...]
```

```
#virsh dumpxml win10
```

```
[...]  
  <video>  
    <model type='qxl' ram='65536' vram='65536' vgamem='16384' heads='1'/>  
    <address type='pci' domain='0x0000' bus='0x00' slot='0x02' function='0x0'/>  
  </video>  
  
  <hostdev mode='subsystem' type='pci' managed='yes'>  
    <source>  
      <address domain='0x0000' bus='0x02' slot='0x02' function='0x2'/>  
    </source>  
    <address type='pci' domain='0x0000' bus='0x00' slot='0x07' function='0x0'/>  
  </hostdev>
```

```
[...]
```

Administrador de dispositivos

Archivo Acción Ver Ayuda

VirtualPC

- Adaptadores de pantalla
 - AMD MxGPU
 - Tarjeta gráfica VGA es
- Adaptadores de red
- Controladoras ATA/ATAPI
- Controladoras de almacenamiento
- Controladoras de bus serie
- Controladoras de disquete
- Controladoras de sonido y vídeo
- Dispositivos de interfaz de usuario

Propiedades: AMD MxGPU

General | Controlador | Detalles | Recursos

AMD MxGPU

Tipo de dispositivo: Adaptadores de pantalla

Fabricante: Advanced Micro Devices, Inc.

Ubicación: Ranura PCI 8 (Bus PCI 0, dispositivo 8, función 0)

TechPowerUp GPU-Z 2.8.0

Graphics Card | Sensors | Advanced | Validation

Name: AMD MxGPU [Lookup]

GPU: 692F Revision: 00

Technology: Unknown Die Size: Unknown

Release Date: Unknown Transistors: Unknown

BIOS Version: Unknown [UEFI]

Subvendedor: Undefined Device ID: 1002 692F - 0000 0000

ROPs/TMUs: Unknown Bus Interface: PCIe x16 3.0 @ x0

Shaders: 0 Pixel / 0 Vertex DirectX Support: Unknown

Pixel Fillrate: Unknown Texture Fillrate: Unknown

Memory Type: Unknown (Hynix) Bus Width: 256 Bit

Memory Size: 464 MB Bandwidth: Unknown

Driver Version: 23.20.15007.1005 / Win7 64

Driver Date: Dec 17, 2017 Digital Signature: Beta

GPU Clock: 0 MHz Memory: 0 MHz Shader: N/A


Default Clock: 0 MHz Memory: 0 MHz Shader: N/A

AMD CrossFire: Disabled

Computing: OpenCL CUDA PhysX DirectCompute 5.0

AMD MxGPU [Close]

Blender - Can't detect 3D hardware accelerated Driver!

 Your system does not use 3D hardware acceleration. Blender requires a graphics driver with OpenGL 2.1 support.

This may be caused by:

- * A missing or faulty graphics driver installation. Blender needs a graphics card driver to work correctly.
- * Accessing Blender through a remote connection.
- * Using Blender through a virtual machine.

The program will now close.

[Aceptar]

Costes: 30 equipos para 3D

30 x CPU i5/i7

30 x 8 GB

Tarjeta gráfica dedicada (100-300 €)

Disco ssd-nvme / Placa Base

2 x CPU i9 / Xeon

2 x 128 GB de RAM

2 x AMD FirePro s7150

Placa base con SRIOV + 10Gbps



tic.escoladeltreball.org



thedocs.IsardVDI.com



github.com/isard-vdi

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