



SOLUTION BRIEF

Powerful Pixel Streaming with Vultr

[VULTR.COM](https://vultr.com)

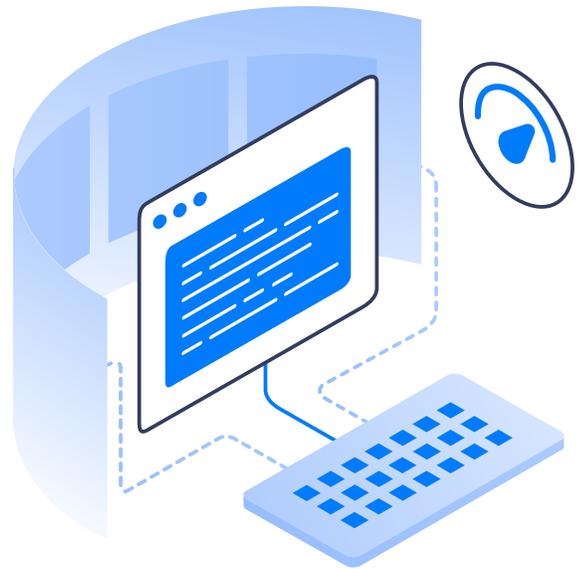
Modern, immersive digital experiences tend to be demanding, often requiring expensive graphics hardware. These high costs create a significant barrier for content creators producing 3D images and visual effects for games, motion pictures, architectural and retail visualizations, vehicle prototypes and more. Pixel streaming has become increasingly popular among developers as a solution to this problem. It makes professional creative tools and interactive entertainment accessible beyond high-end Hollywood production companies.

Pixel streaming allows users to remotely control an Unreal Engine application in real time by decoupling media rendering from the display. Instead of rendering graphics on the client side, the application streams rendered media over a peer-to-peer connection. The client-side device must only be powerful enough to decode the media stream. Even many mobile devices are sufficient for this purpose.

However, pixel streaming applications require setting up a complex network infrastructure. It must maintain a consistent connection between the user and the Unreal Engine application. To achieve this requires the ability to deliver vast amounts of data over an ultra-low latency, two-way connection. This can be incredibly difficult to set up for remote employees – especially for those on distributed teams.

A successful streaming project requires the work of many people – from creative VFX and rendering teams to web developers to DevOps engineers. Modern pixel streaming projects also leverage machine learning and AI techniques, compelling the need for data scientists.

Each role has different requirements in terms of tools and resources. And empowering an entire distributed team to produce content through pixel streaming takes several different cloud features. Vultr's solutions offer teams everything they need to create a robust pixel streaming experience in order to develop new content.



Vultr offers easy-to-use pixel streaming solutions

Few companies have the resources to set up pixel streaming in-house. It can leave you trying to keep up with the blistering pace of GPU innovation on your own budget. A centralized, on-premises server farm is expensive to maintain and still doesn't account for everything between the edge of your network and your users.

Vultr is a dedicated, cloud-native partner that provides numerous affordable and customizable pixel streaming solutions. Its global footprint, vendor-agnostic approach, and deep ties with NVIDIA enables you to receive the solution that matches your application's needs.

Customizability

Content creation might demand all of an expensive GPU for only a short time. On the other hand, delivering interactive content to thousands of users calls for a cloud of distributed GPU instances. That's why a one-size-fits-all solution leads to under or overprovisioned assets.

Vultr's pixel streaming solutions offer a range of customization options to suit the needs of your specific project, at any scale. They allow you to provision only what you need, for as long as you need it, to help you cut costs. You and your team can also deploy servers on your choice of OS – including custom ISOs – and provision them with high-performance NVMe volumes or cached object storage.

You can set up your pixel streaming on fully managed Vultr infrastructure and purchase compute by the hour or reserve capacity on Bare Metal to guarantee your users the computing power they need.

High-performance computing power

Pixel streaming demands a lot from your hardware. Creative and scientific applications typically need to render complex, sometimes photorealistic, scenes at high resolutions. On the other hand, massive multi-tenant applications need to serve multiple streams in parallel, typically at higher framerates and more responsive controls. Each stream needs to render in isolation so that a failure in one doesn't bring down the application for all users on that node.

In addition, you must encode your stream with enough compression to cross your network at a sustainable bandwidth. Consumer-grade computing solutions are unlikely to meet these demands, but Vultr offers two great Cloud GPU options for pixel streaming: the NVIDIA A40 and the A100 GPU.

The NVIDIA A40 is a capable platform for physical modeling, simulation workflows, and photorealistic rendering. It's powerful enough to run dedicated rendering nodes for streaming complex scenes to VR, composite displays, or other high-resolution outputs. Its raytracing and AI-based compute optimization capabilities, in particular, make it an excellent choice for creative work such as visual effects, architectural renders, and VR streaming.

Vultr Cloud GPUs powered by the more powerful NVIDIA A100 Tensor Core GPU can easily handle workloads with higher CPU demands, but their true value is the ability to virtualize your GPUs. Rather than purchasing a single GPU for each Pixel Streaming user, you can use Vultr's cloud GPU platform to partition a single physical A100 and rightsize your GPU provisioning for containerized workloads.

Global network of data centers

When providing a responsive experience, proximity makes all the difference. Pixel streaming requires a global network of data centers. You need a cloud solution partner that serves content from nodes close to the network edge.

Vultr has over 30 data centers located in strategic locations around the world. It can stream data from Bare Metal solutions or run containerized workloads on fractional GPU instances. Your data moves through high-performance connections on Vultr's continually optimized routing and peering agreements. And your customers can depend on your application's availability thanks to [Vultr's robust SLA](#).

Besides increasing the image quality of your stream, you can also use Vultr's network to make your stream more resilient. NVIDIA-powered Vultr Cloud GPUs and high-bandwidth connections let you and your team encode streams with more recovery information and post-processing data to correct visual artifacts. Vultr's affordable bandwidth makes this typically expensive practice feasible to implement.

Fractional GPU advantage

Pixel streaming applications with multiple clients are unlikely to need a full GPU for each user. Fractional GPUs allow you to only use the amount of computing power you need without having to pay for a full GPU.

The Vultr fractional cloud GPU platform is an industry-first collaborative effort with NVIDIA that isolates portions of a GPU for provisioning as vGPUs. This lets you provision fractions of an NVIDIA A100 Tensor Core GPU or A40 to provide right sized vGPU instances for massively scalable pixel streaming applications.

The A100 Tensor Core GPU and A40 are both excellent platforms for containerized pixel streaming applications such as cloud gaming or remote collaboration. The A40 provides enough power to handle complex real-time rendering even when shared among users. The A100 adds hardware-based isolation between users and can run workloads on even smaller fractions of the GPU.

The complete solution

As mentioned above, a successful streaming project requires several different roles working together seamlessly. Beyond the infrastructure mentioned earlier, Vultr's cloud solution has many features that empower teams to create quality pixel-streaming solutions.

Any cloud approach for remote workers must start with a robust and reliable [virtual desktop](#) that's secured with a [first-rate VPN](#). This provides all workers with a safe and reliable workspace that's accessible from anywhere in the world.

Vultr's [edge computing solution](#) allows your engineers and web developers to deploy rendering applications close to users, which reduces latency and allows for more successful pixel streaming. And [high performance computing](#) options help power those applications and give the VFX team the power they need for rendering the visual experience.

To succeed with pixel streaming, data scientists can use [machine learning techniques](#) to assist with video compression, latency reduction, and other additions that give pixel streaming projects extra appeal. And web developers can use [blockchain technologies](#) to increase security and manage payments and purchases through cryptocurrency.

These roles require different infrastructures, but they can all be supplied through Vultr's robust cloud solution. You can create an [effective and reliable SaaS platform](#) by combining these Vultr features to empower your entire team.

The Vultr approach

Vultr's dedication to multi-cloud, vendor-agnostic solutions means you're covered in any situation. Its cloud resources are available on a pay-as-you-go basis and are designed to complement the tools and technologies your team knows best. Integrate your technology stack using Vultr Marketplace Apps to build a cloud-native pixel streaming infrastructure that's all your own.

Vultr is also committed to helping its customers, offering a comprehensive support portal and FAQs to help you and your team quickly overcome any issues. For even better performance, join the Vultr Partner program and let us handle your infrastructure so you can focus on delivering your best digital experience. Get dedicated support and access to Solutions Engineering, benchmarking, and edge computing to stay competitive in whichever market you call home.

Pixel streaming made easy with Vultr

Vultr puts cloud-native pixel streaming within your reach. Give your users a high-performance computing experience that feels local no matter where they are or what they're streaming. Securely connect your tools and workflows to the largest independent network infrastructure in the world and ensure your app is always available. And provision right sized assets using Vultr's fractional GPUs and flexible compute options to keep your bill lean and predictable.

▶ Check out Vultr's full [pixel streaming offerings](#) to learn more about how we can benefit your business. You can also check out [Vultr's official documentation](#) to learn how to get started.