

## Overview

Procedural Volumetric Cloud is the feature to render dynamic clouds for large scale outdoor environments. Clouds are procedurally generated by combination of noise function and volume texture artists create. After that clouds are rendered by using ray-marching and physically plausible shading.



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## Usage

This feature is turned off by default. Before using this, you need to set the CVar `r_VolumetricClouds=1` or `2` in the console window or by adding it to the `system.cfg` or `game.cfg` to activate this feature. If nothing shows, please see the CVar `e_Clouds` is set to 1.

After it's activated, you can adjust the parameters for Procedural Volumetric Clouds in [Environment Editor](#) and [Level Settings](#).

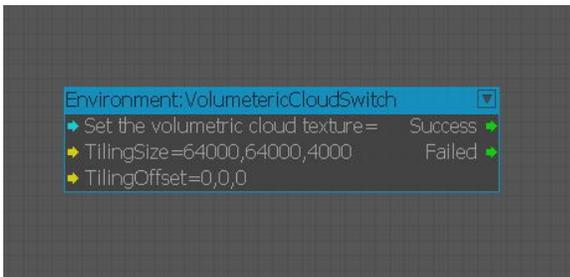
Following parameters affects the final appearance of clouds.

- Environment Editor
  - Sun
  - Sky Light
  - Cloud Shading
  - Volumetric Clouds
- Level Settings
  - Env State
    - Wind Vector (the wind moves clouds.)
  - Volumetric Cloud

## VolumetricCloudSwitch Flowgraph node

VolumetricCloudSwitch was added to Environment Flowgraph node group.

Using this node, you can switch user-defined volumetric cloud texture, tiling size, and tiling offset at runtime.



## CloudBlocker entity

This entity can exclude or decay clouds inside or outside of a sphere region.

Up to 4 entities in a level can work simultaneously.

Parameter	Description
Active	If true, cloud blocker will be activated.

DecayEnd	Specifies the end distance of fog density decay. (in meters)
DecayStart	Specifies the start distance of cloud density decay. (in meters)
DecayInfluence	Specifies the influence of fog density decay.

## CVars

Cvar	Description	Comment and examples
<b>r_VolumetricClouds</b>	Enables procedural volumetric clouds.	0 - Disabled (default) 1 - Enabled (1/2x Resolution) 2 - Enabled (1/4x Resolution)
<b>r_VolumetricCloudsRaymarchStepNum</b>	Set the step number of ray-marching for procedural volumetric clouds.  Acceptable number is from 16 to 256, and it should be multiple of 16.	64 (default)
<b>r_VolumetricCloudsPipeline</b>	Set the pipeline mode of procedural volumetric clouds.	0 - Monolithic shader pipeline, using less memory.  1 - Multiple shaders pipeline, using more memory, mostly faster.(default)
<b>r_VolumetricCloudsStereoReprojection</b>	Enables stereoscopic reprojection for procedural volumetric clouds to accelerate the rendering.	0 - Disabled. 1 - Enabled. (default)
<b>r_VolumetricCloudsTemporalReprojection</b>	Set temporal reprojection mode for procedural volumetric clouds.	0 - faster but prone to flickering artifacts.  1 - a bit slower but less flickering artifacts. (default)
<b>r_VolumetricCloudsShadowResolution</b>	Set the resolution of volumetric clouds shadow map for casting shadow on the terrain and low shading-LOD clouds.	64 (default)