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# Tree Generator

## Generation

### Size Scalar

Scales the entire tree model, including the tree radius. (*Float*)

### Branches/Caps

**Triangles:** Branches and caps will be generated using triangular polygons. (*Enumeration*)

**Quads:** Branches and caps will be generated using quadrilateral polygons. Using quads will result in “cleaner” geometry, but with the following restrictions: (*Enumeration*)

- Radial segments are forced to even number values.
- The radial segment reduction curve is ignored.

## Leaves/Fronds/Meshes

**Triangles:** Leaves, fronds, and meshes will be generated using triangular polygons. *(Enumeration)*

**Quads:** Leaves, fronds, and meshes will be converted into quadrilateral polygons. Degenerate triangles may occur if a mesh could not be 100% qualified by our algorithm. *(Enumeration)*

## Masks

Assign mask assets here to limit the placement of generation. Read more about mask assets in the documentation. *(Multiproperty)*

## Shape

### Radius

The radius of the tree area. *(Float)*

### Sink

The amount to lower the tree below the ground plane. *(Float)*

### Roll

The amount to rotate the entire tree around the origin. *(Float)*

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## Level of Detail

### Enabled:

Toggles level of detail preview. *(Boolean)*

**Enabling LOD preview may slow down compute time.**

### Preview Style

- **Manual:** LOD state is controlled with the LOD indicator in the tree window or via the CTRL +

left-click key combo. *(Enumeration)*

- **Use near and far:** LOD state is determined based on the camera's position between the near and far LOD planes. *(Enumeration)*

## Count

The number of discrete 3D levels of detail. *(Integer)*

## Near

The distance from the camera to begin the initial LOD transition. *(Float)*

## Far

The distance from the camera to complete the final 3D LOD transition. *(Float)*

## Billboard Start

The distance from the camera to initialize fading the billboard. *(Float)*

## Billboard End

The distance from the camera to finish fading in the billboard. *(Float)*

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# Leaf Collision

## Enabled

When enabled, leaf collision is active (either automatically or manually). *(Boolean)*

## Style:

- **Classic:** “Classic” leaf collision matches the algorithm that has been used in previous versions. This style remains as an option to maintain the same leaf collision results in older models. *(Enumeration)*
- **Accelerated:** Leaf collision is noticeably faster than with “Classic”, but may result in a different set of surviving leaves than with “Classic”. It is recommended to use “Accelerated” for any new tree models. *(Enumeration)*
- **Best Guess:** The leaf collision style is chosen automatically, based on whether LOD is enabled or not. If LOD is enabled, the tree is likely a real-time tree, and “Classic” will be used. Otherwise, the tree is considered a high-detail tree, and “Accelerated” will be used instead. *(Enumeration)*

## Automatic

- **None:** No automatic leaf collision. (*Enumeration*)
- **Cull:** Automatic leaf culling. (*Enumeration*)
- **Spread:** Automatic leaf spreading. (*Enumeration*)
- **Spread then cull:** Automatically spread, then cull leaves. (*Enumeration*)
- **Cull then spread:** Automatically cull, then spread leaves. (*Enumeration*)

## Spread Factor

Distance to spread colliding leaves in order to reduce overdraw and z-fighting. (*Float*)

## Spread Out

Manually “spreads” all leaf nodes by the spread factor. (*Function*)

## Restore Spread

Manually restores all leaf nodes, nullifying the “spread” effect. (*Function*)

## Cull Tolerance

The distance from the center of each leaf where colliding leaves are allowed (1.0 = the extents of each leaf). (*Float*)

## Cull

Manually culls leaf nodes according to the cull tolerance. (*Function*)

## Restore Culled

Manually restores all culled leaf nodes. (*Function*)

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## Proxy Collision

### Automatic

Toggles automatic culling of proxies, including on load. (*Boolean*)

### Cull

Manually culls overlapping proxy nodes. (*Function*)

## Restore Culled

Manually restores all culled proxy nodes. *(Function)*

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## Lightmap

### Target resolution

This property controls the resolution for which the lightmap uvs are computed. It is important to not use a lightmap smaller than specified here in UE4. Our algorithm accounts for many factors related to how UE4 computes lightmaps including texel boundaries. Using a smaller lightmap will produce artifacts. *(Enumeration)*

### Display multiplier

Use this option to see what the lightmap density will look like at different multiples of the target resolution. Use this option to pack the lightmap uvs into a small resolution (useful for lightmapping painted instances) and then see how different resolutions in UE4 will affect the density. You can never go lower than the target resolution without artifacts, but you can go higher. *(Enumeration)*

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## File

### Use Compression

Use this option to zip compress '.spm' files when they are saved to dramatically reduce the file size. *(Boolean)*

### Embed Geometry

When this option is enabled, the geometry of the tree model is stored in the file alongside the procedural parameters used to generate it. *(Boolean)*

**If you are using the SpeedTree SDK, you must have this option enabled.**

### Fix Leaf Winding

When enabled, leaf mesh vertex winding is adjusted across the entire leaf cloud to match the average of the normals at each vertex so that two-sided lighting works correctly in some third party engines and other applications. *(Boolean)*

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# Custom

## User Data (1-5)

Each tree model can be given up to 5 user data strings, which hold special information to be read by the SDK. (*String*)

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