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| |  |  | | --- | --- | |  | **Vis\_Leafgroup 'hands on' :: Bjarne Grönnevik** | |

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| This tutorial will attempt to teach by example how to use the vis\_leafgroup entity. It will use less pictures and more full map file examples. It is not a complete tutorial on how the VIS stage works. For an easy to understand VIS stage explanation, check out "VIS for dummies" by TheStorm.   1. The basic 2. The fine print 3. How to do it 4. Good ideas 5. Lets do it!   **The basics**  Targeted vis\_leafgroup brushes work like this ( very simplified ):  Imagine 2 invisible boxes. When the player is located inside one box, nothing inside the other box is drawn. Simple!   |  | | --- | | https://web.archive.org/web/20070922181529im_/http:/map.planetmedalofhonor.gamespy.com/mohaa/tutorials/vis_handson/vis_boxes.jpg | | ( a vis\_leafgroup brush targets another vis\_leafgroup brush ) |   So why would you waste your precious time with this? Well: sometimes the map compiler will have a rather different opinion on what can be seen from a specific place in the map than you do... If you take a look at the pictures in **step 4** in the [How to do it](https://web.archive.org/web/20070922181529/http:/map.planetmedalofhonor.gamespy.com/mohaa/t.php?id=80#howto) section, you will see that a lot more than you think is drawn by the game engine. This does not have to be a problem if it does not drop the FPS a lot, but if it does: you will want to learn about the **magic of vis\_leafgroup**.    **The fine print**   * Both boxes must have the **common/vis texture**. * Both boxes must be **vis\_leafgroups** ( with the vis textured brush selected, right click on the map grid and select vis->leafgroup ). * One ( or both ) box(es) should target the other.   + Method 1: set a **targetname** on the brush that should be targeted, and a **target** with the same value on the targeting brush. Or you can also use the CTRL+k method below after you gave the target your own name ( Radiant will use the targetname you set ).   + Method 2: Select first the targeting brush and then the targeted brush and then press CTRL+k ( **K**onnect? )... order is important! * The brush that is being targeted will hide its contents when the player is in the brush that targets it ( 2 brushes may target each other, and often will ). * A vis\_leafgroup may target multiple other vis\_leafgroups. * Only the faces completely inside the targeted vis\_leafgroup will be affected. * The boxes may have any shape ( does not need to be a box ). * vis\_leafgroup does exactly as it is told. If the result is a brush that is not drawn when it should: its your fault. Targeted vis\_leafgroups does not care if there is a blocking wall or not, if you are in the targeting vis\_leafgroup, the contents of the targeted vis\_leafgroup will not be drawn. * Script objects and other "dynamic content" in your map may not be affected as expected by a targeted vis\_leafgroup.   **How to do it**  The major part of this tutorial is a \*.map file. This \*.map file contains a cut out part of the "Vemork factory objective" map and how I solved the FPS drops, using targeted vis\_leafgroups. It is the hall around the distiller bomb objective, and it was a major FPS low point in the map for 2 main reasons:   1. Complex brushwork. The distillers are made up of a lot of curved surfaces, and there is lots of distillers. Thus: its a hard job for the engine to draw it. 2. It is one of the central points in the map. Often there are fire fights around the distillers as one of the Allied objectives is to place a bomb here. Adding some frenzied soldiers with guns blazing and some nade explosions does not help FPS.   So, how did I do it?   |  | | --- | | https://web.archive.org/web/20070922181529im_/http:/map.planetmedalofhonor.gamespy.com/mohaa/tutorials/vis_handson/vis_in_radiant.jpg | | ( how the vis brushes look in MOHRadiant ) |   **Step 1)** Early on I realized that to be able to pull this of I would need to be able to limit visibility. As you can see straight through the distiller racks, they would be virtually impossible to optimize. So I added the concrete blocks behind every distiller. So now I can tell MOHAA: "don't draw anything behind this" without the player saying "Hey, that thing way over there just popped out of existence, that's ugly!".  **Step 2)** Compile the map. ( **WARNING!** Dont use the **-fast** switch for the VIS compile stage. If you do that the VIS will not be as it should be in the final version, and it is the VIS for the final version of the map we are optimizing here. ).  **Step 3)** Run MOHAA in development mode ( Start it with this command: "MOHAA.exe +set developer 1 +set thereisnomonkey 1 +set cheats 1 +set ui\_console 1" ) to be able to use the otherwise "cheat protected" command in the next step. **And** you must start the map by writing **devmap** instead of the nomal **map** command (used when starting the map via the menus ).  **Step 4)** Enter this command into the console window after you loaded your map: **r\_showtris 2** ( deactivate it with **r\_showtris 0** ). This command lets you see all triangles that the engine draws, even the ones behind that wall that you had no idea that it drew... Now you can see where it would be a good idea to place targeted vis\_leafgroups.   |  |  | | --- | --- | | https://web.archive.org/web/20070922181529im_/http:/map.planetmedalofhonor.gamespy.com/mohaa/tutorials/vis_handson/r_showtris_0.jpg | https://web.archive.org/web/20070922181529im_/http:/map.planetmedalofhonor.gamespy.com/mohaa/tutorials/vis_handson/r_showtris_2.jpg | | ( Standard ) | ( with r\_showtris 2 ) |   In the example above you can see that the complex brushwork behind the concrete blocks are drawn even if the player has no chance of actually seeing them...  **Step 5)** If you found some spots that could be optimized better than the default vis compile: Go back to MOHRadiant and place targeted vis\_leafgroups at the most obviously FPS wasting places that you found **in step 4** and one at the position from where the brushes should not be seen, and the return to **step 2**. If you found no such spots: Go to the next step.  **Step 6)** If the FPS problem is fixed at this point: **Congratulations!** If not, the basic construction of your map is probably flawed ( It may look GREAT, but players prefer good fun to good looks ( if they must choose ) ). Go back to MOHRadiant and see if you cant insert a wall somewhere or place a stack of boxes at a strategic point to be able to block player view, and thus maybe get a better chance to use some more effective targeted vis\_leafgroups.  **Good ideas**  I found that you should always name the targetnames yourself. As an example"distiller\_hall\_southwest" is a better name than the name given by Radiant when using the CTRL+k method to target brushes ( then they get crappy names like "mv1" & "mv5" ). Because you will without a doubt end up with more cross referenced vis\_leafgroups than you had any idea about when you started optimizing. So: give the vis\_leafgroups good names ( not "oh\_my\_god\_another\_vis" but names denoting its intended use or position, like "not\_seen\_from\_distiller\_ventilation" ).  **Lets do it!**  OK, now you know how to do it in theory. Next you must learn how to do it in practice. I can't tell you how to do that, but I can tell you how I did it... so download the example files below and look at how I placed the VIS brushes after lots of compile -> check -> redo -> compile -> check -> redo -> compile -> check -> redo -> compile -> check ( I think you get the point ).  Good luck! |

**NOTE: The Example File was no longer available for download and is thus not included.**