

# Quake2maX

## Official Manual

By psychospaz



<http://www.planetquake.com/quake2max/>  
<http://modscape.telefragged.com/q2max/>

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# 1.0 Installation and Introduction

## 1.1 Introduction

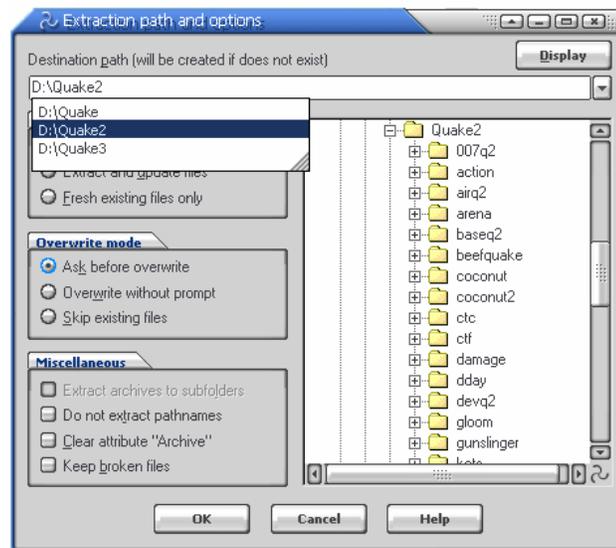
Quake2maX is an OpenGL only Quake2 engine modification. You need Quake2 full retail version with the 3.20 update installed before you can begin. Quake2maX does not have any software rendering and 3dfx cards might be unreliable. This engine modification is meant for higher end systems and might run quite badly if you have a slow CPU, little ram, an older video card or other hardware limitations.

## 1.2 Installation

1. First open the file you downloaded with the appropriate compressed file extraction tool (i.e. [WinZip](#) for .zip files or [WinRar](#) for .rar files)



2. Second select your Quake2 Directory (i.e. C:\Games\Quake2\)) and extract to the selected directory.



3. Run Quake2maX.exe or set up GameSpy, All-Seeing-Eye, or whatever you use to find server to use Quake2maX.

4. If you encounter any problems with installation make sure you have the newest version of whatever extraction tool you're using, and if you still cant get it to work, then consult the [Quake2maX](#) forums for lightning fast help.

## 2.0 Feature List

### 2.1 General Features

- Global shader Language RScript (see [section 6.0](#) for details)
- Text Formatting (see [section 5.0](#) for details)
- New image types [Targa, Jpeg and Portable Network Graphics, TGA, JPG and PNG respectively]
- Support for image sizes up to 4096x4096 (or hardware limit)
- Hardware Gamma and Texture Compression
- Mouse driven menu with new menu graphics (art and shaders)
- Celshading: outline and lighting
- New sorting routines for proper particle and entity z-sorting
- Stainmaps for infinite explosion marks and blood
- Decals for bullet marks and other special effects

### 2.2 Particles

- New easy to use system (for programmers) with custom special effects
- Shader support
- Custom blend functions
- Physics that interact with world
- Lit by world and dynamic lights
- Sorted per transparent surface
- Decals clipped to surface planes

### 2.3 Entities

- Better smooth normal based lighting (world and dynamic)
- Shaders for shells (quad, invulnerability etc.)
- Stencil buffered volumetric shadows
- Sorted per transparent surface

### 2.4 Third Person Camera

- Third person camera option
- Alpha blended when near to walls for visibility
- Clipped to world
- Aim adjusted for maintained accuracy

# 3.0 Commands and cVars

## 3.1 Commands

Command Name	Description	Parameters
<b>3dcamera</b>	Toggles the third person camera	None
<b>config</b>	Saves a .cfg file	Name of file (do not include .cfg)
<b>screenshot</b>	Takes a screenshot using the file format selected.	Screenshot file type "tga" "jpg" or "png"

## 3.2 cVars

CVar Name	Type	Default	Description	Parameters Info
<b>con_font</b>	String	"default"	This will set the in-game font	Font file name in "/fonts/"
<b>con_font_size</b>	Float	8	Pixel size of each character	
<b>inven_pos</b>	Integer	0	Position of inventory list on screen. Adjust for better clarity of the overall player view.	0: center 1: top-left 2: top-right 3: bottom-left 4: bottom-right
<b>menu_sensitivity</b>	Float	1	Sensitivity of mouse in menus	
<b>netgraph</b>	Boolean	0	Enables net graph display	
<b>netgraph_pos</b>	Integer	0	Position of net graph on screen. Adjust for better clarity of the overall player view.	0: bottom-right 1: bottom-left 2: top-right 3: top-left
<b>crosshair</b>	Integer	1	This sets crosshair type	0: off 1-9: different crosshairs
<b>crosshair_scale</b>	Float	1	This sets crosshair scale	
<b>m_noaccel</b>	Boolean	0	Toggles WinXP mouse acceleration fix	
<b>autosensitivity</b>	Boolean	1	Toggles fov (zooming) adjusting mouse sensitivity for constant feel.	
<b>cl_blood</b>	Integer	0	Sets type of effect for blood. Anything over 1000 can hurt your system. Go crazy at your own risk	0: Splat #: Amount of Bleed Particles
<b>cl_explosion</b>	Integer	0	Toggles explosion type (underwater explosion bubbles & rocket trail bubbles)	0: Simple Blast 1: Blast and Smoke/Bubbles
<b>cl_explosion_scale</b>	Float	1	Sets scale of explosion effects	
<b>cl_railred 20</b> <b>cl_railgreen 50</b> <b>cl_railblue 175</b>	Integer	20 50 175	Use these to set the rail color for all rail effects	0-255
<b>cl_railtype</b>	Integer	0	This will select current rail effect used.	0: solid beam 1: beam with spiral 2: special heat beam
<b>cl_3dcam</b>	Boolean	0	This will toggle the camera on and off	
<b>cl_3dcam_dist</b>	Float	50	Sets distance for camera offset	
<b>cl_3dcam_angle</b>	Float	0	Sets upward angle for camera offset	
<b>cl_3dcam_alpha</b>	Boolean	1	Toggles alpha blending for camera pushed against wall	
<b>cl_3dcam_adjust</b>	Boolean	1	Toggle auto-adjustment of aim so that accuracy isn't lost	
<b>cl_drawfps</b>	Boolean	0	Toggles drawing an FPS counter	
<b>cl_demomessage</b>	Boolean	1	Toggles drawing a demo message	
<b>cl_hudres</b>	Float	640	Scales HUD to resolution width	
<b>r_decals</b>	Integer	250	Sets amount of decals to be drawn onscreen	
<b>r_dlights_normal</b>	Boolean	1	Toggles dynamic light using surface normals to determine if light is cast to the surface or not.	
<b>r_stainmap</b>	Boolean	1	Toggles rendering of the stainmap. The stainmap is basically a modified lightmap that's is used to display decal style effects with no slowdown.	
<b>r_celshading</b>	Boolean	1	Toggles use of celshading. This supposedly simulates cartoon drawing and shading.	
<b>r_celshading_width</b>	Integer	3	Sets size of lines for celshading outlines	
<b>r_shaders</b>	Boolean	1	Toggles use of shaders in-game	
<b>r_skydistance</b>	Integer	2300	Size of skybox: increase to see further	
<b>r_overbrightbits</b>	Integer	2	Sets overbrightness amount	Valid Values: { 1 2 4 }
<b>r_model_lightlerp</b>	Boolean	1	Toggles better model lighters	
<b>r_model_dlights</b>	Integer	3	Sets amount of high quality dynamic lights if r_model_lightlerp is on	
<b>rs_detail</b>	Boolean	1	Toggles use of stages with the detail flag	
<b>rs_dynamic_time</b>	Float	0.1	Sets time between screen capture for dynamic texture	Time in seconds
<b>gl_surftrans_light</b>	Boolean	1	Toggles lighting transparent map surfaces like water/windows	
<b>gl_transrendersort</b>	Integer	1	Toggles Z-sorting entities and particles for proper blending	0: no sorting 1: sort elements 2: sort elements per surface
<b>gl_shadows</b>	Boolean	0	Toggles Projective shadows	
<b>gl_screenshot_quality</b>	Integer	85	Sets quality percent for screenshot compression	
<b>gl_stencil</b>	Boolean	1	Toggles using stencil buffer	The game must be run in 32-bit mode, non-3dfx
<b>gl_particle_lighting</b>	Float	0.75	Sets particle lighting scale	0.0 - 1.0 range
<b>gl_particle_min</b>	Integer	0	Minimum render distance	
<b>gl_particle_max</b>	Integer	0	Maximum render distance	

## 4.0 Menu Mouse Usage

### 4.1 Main Menu

Mouse Action	Button
Mouse over	Select Option
Mouse1 (single click)	Enter Submenu

### 4.2 Sub-Menu

Mouse Button	Action Box	Selection Box	Slider
Mouse1 (single click)	Initiate Command	Rotate Right	Slide Option
Mouse2 (single click)		Rotate Left	Move value by one



\* Mouse2 (double click) always goes back a menu.

## 5.0 Text Formatting

Just like in Quake3, if you type out ^ with a character following you can set up colors and other formatting goodness for the rest of the string. Here are the codes. Colors use Q3 codes as a base for those who already know them.

^	Effect on following characters
1	Red
2	Green
3	Yellow
4	Blue
5	Teal
6	Purple
7	White
8	Black
9	Dark Red
0	Gray
s	Shadow
i	<i>Italic</i>
b	<b>Bold</b>
r	Resets current effects to default
^	Just a simple '^' character

Example: " ^b^1p^8sychospaz^r " = " **p**sycho**s**paz "



\* Quake2 has a 16-character limit on names per mod. You'll have to make a new mod to extend the limit.

# 6.0 RScript

## 6.1 General Setup

RScript is the name of the simplistic script language that has been designed and implemented into the modified Quake II engine, Quake2maX, to allow custom visual effects to be rendered on surfaces within the game.

The way RScript works is that it replaces an image with a shader of the same name at render time. A shader is a multi-pass series or distorted images that create cool real-time effects. Here is an example of a shader replacement.

All RScript shaders are contained in ".rscript" files under the /scripts/ subdirectory per mod (/Quake2/baseq2/scripts/example.rscript). These can be in a simple directory or in a pak if wanted.

```
Original Skin:      "models/weapons/v_shotg/skin.pcx "
```

```
Shader (in .txt):  ...
                   models/weapons/v_shotg/skin
                   {
                       {
                           dynamic
                           envmap
                       }
                       {
                           map models/weapons/v_shotg/skin.png
                           blendfunc GL_SRC_ALPHA GL_ONE_MINUS_SRC_ALPHA
                       }
                   }
                   ...
```

This would be a 2-pass shader replacement, which first does a dynamically generated environment map followed by an alpha blended skin over top to create a shiny effect.

All shaders are defined in .txt files that contain single or multiple shader definitions.

## 6.2 Mesh Control

All mesh control functions are called right after the first "{" of the shader.

```
models/weapons/v_shotg/skin
{
    MESH CONTROL HERE
    {
        ...
    }
}
```

Name	Parameters	Description	Example
safe		This flag tells the engine not to flush the script from memory on a map change. By default, all scripts are flushed from memory as to preserve RAM, but some scripts are wanted to remain in memory at all times (such as scripts for the console). This flag should be used only when absolutely required.	... { safe { ... }}
subdivide	Integer <size>	This function tells the engine to subdivide the surface into blocks with sides of a specific length. Proper use of this function can help create better-looking turbulent (think water warp) effects.	... { subdivide 64 { ... }}
vertexwarp	Float <speed> Float <distance> Float <smoothness> 0.001 to 1.0	Warps the vertexes of the surface in a wave pattern along it's plane	... { vertexwarp 3 8 0.001 { ... }}
picsize	Integer <width> Integer <height>	Sets size for images in HUD and menu so that higher resolution replacements can be manually scaled.	... { picsize 128 64 { ... }}
model		This flag changes an image in the HUD or menu into a model set that is defined by adding a model per stage. Stages used for models are explained in a later section of this document.	... { ... }}

# 6.0 RScript

## 6.3 Stage Control

All stage control functions are called within a stage.

```
models/weapons/v_shotg/skin
{
    {
        STAGE CONTROLS HERE
    }
}
```

Name	Parameters	Description	Example
map	String <filename>	This sets the texture to be used in the given rendering pass. You must give the whole path relative to the mod directory.  This function specifies the filename of the texture map to apply on the stage. If using frame-based animation, ignore this function.  Optionally instead of specifying a texture image, a .cin (Quake II cinematic) file may be used here. Only 8 of these are allowed to be used at once, any more will be ignored by the engine. These are decompressed in real-time and uploaded to OpenGL, allowing streaming video on surfaces within the game.	<pre>{ map models/.../v_shotg/skin.png }</pre>
colormap	Integer <red> 0 to 255 Integer <green> 0 to 255 Integer <blue> 0 to 255	This function is instead of the "map" function that selects a texture. use this if you are going to fill a layer with a whole color instead of an image.	<pre>{ colormap 255 255 0 }</pre>
dynamic		This sets the image used to a screenshot of the world from the last frame.	<pre>{ dynamic }</pre>
alphamask		Alpha masking is a pretty simple effect. If the texture map of a stage has an alpha channel on it, and alpha masking is enabled on it, any pixels with an alpha value less than 255 aren't rendered, leaving sections of the image transparent (or "see-through"). This effect is often used to create grates and chain-link fence type images.	<pre>{ SET TEXTURE HERE alphamask }</pre>
blendfunc	<source>  GL_ZERO GL_ONE GL_DST_COLOR GL_ONE_MINUS_DST_COLOR GL_SRC_ALPHA GL_ONE_MINUS_SRC_ALPHA GL_DST_ALPHA GL_ONE_MINUS_DST_ALPHA GL_SRC_ALPHA_SATURATE  <destination>  GL_ZERO GL_ONE GL_SRC_COLOR GL_ONE_MINUS_SRC_COLOR GL_SRC_ALPHA GL_ONE_MINUS_SRC_ALPHA GL_DST_ALPHA GL_ONE_MINUS_DST_ALPHA	This function tells the renderer how to blend the stage in with the previous stages. If the script is meant to leave objects behind it visible. Beware when using it on the first stage of world geometry.  GL_SRC_ALPHA_SATURATE may not be supported by some video cards/drivers.	<pre>{ SET TEXTURE HERE blendfunc GL_ONE GL_ONE }</pre>
blendfunc	<type>  FILTER ADD BLEND	FILTER: "GL_ZERO GL_SRC_COLOR" ADD: "GL_ONE GL_ONE" BLEND: "GL_SRC_ALPHA GL_ONE_MINUS_SRC_ALPHA"	<pre>{ SET TEXTURE HERE blendfunc ADD }</pre>
alphafunc	<type>  NORMAL ENVMAP LIGHT	NORMAL: Uses normal vectors to determine opacity (liquids) ENVMAP: Uses environment mapping to determine opacity LIGHT: Uses vertex light value to determine opacity	<pre>{ SET TEXTURE HERE SET BLENDFUNC HERE alphafunc -NORMAL }</pre>
alphashift	Float <speed> Float <min> Float <max>	--- Inverts current function with a "1-alpha" algorithm  This function controls the alpha value of a stage for blending purposes. It is used to set the amount that the stage is blended into the stage before it, or anything rendered behind it. It must be used in combination with the function "blendfunc" (see Blend Function).	<pre>{ SET TEXTURE HERE SET BLENDFUNC HERE alphashift 3 0.5 0.75 }</pre>
scale	<xtype>  STATIC SINE COSINE  Float <X-Scale> <ytype>  STATIC SINE COSINE  Float <Y-Scale>	This function controls how the stages texture map scales. Scaling can be static, following a sine wave, or following a cosine wave.	<pre>{ SET TEXTURE HERE scale STATIC 4 SINE 0.5 }</pre>
scroll	<xtype>  STATIC SINE COSINE  Float <X-Speed> <ytype>  STATIC SINE COSINE  Float <Y-Speed>	This function controls how the stages texture map moves. Movement can be linear, following a sine wave, or following a cosine wave.	<pre>{ SET TEXTURE HERE scroll COSINE 0.75 STATIC 0.5 }</pre>
rotate	Float <rot_speed>	This function controls how the stages texture map is rotated.	<pre>{ SET TEXTURE HERE rotate 15 }</pre>
envmap		This flag enables the sphere-mapping effect on a stage. This is often used to give a surface a reflective "shiny" effect, such as that found on glass or the surface of water.	<pre>{ SET TEXTURE HERE envmap }</pre>
noightmap		If the destination is a map texture, then it toggles whether or not the lightmap will be drawn. If the destination is a model, then the vertex lighting is ignored during the current render pass.	<pre>{ SET TEXTURE HERE noightmap }</pre>

```
i_health
{
    model
    {
        {
            STAGE CONTROLS HERE
        }
    }
}
```

Name	Parameters	Description	Example
model	String <filename>	This sets the model to be used in the given stage. You must give the whole path relative to the mod directory.	<pre>{ model models/items/healing/large/tris.md2 }</pre>
map	String <filename>	This sets the skin of the given model. You must give the whole path relative to the mod directory.	<pre>{ map models/items/healing/large/skin.pcx }</pre>
origin	Float <x-position> Float <y-position> Float <z-position>	This sets the model's origin inside the rendered scene. You must specify the entire 3 part vector.	<pre>{ SET MODEL AND SKIN HERE origin 100 0 25 }</pre>
angle	Float <x-position> Float <y-position> Float <z-position>	This sets the model's origin inside the rendered scene. You must specify the entire 3 part vector.	<pre>{ SET MODEL AND SKIN HERE angle 45 0 0 }</pre>
scale	<xtype> STATIC SINE COSINE Float <X-Scale> NULL	Set the X-Scale and xtype with y options set to 0. This will scale the entire model.	<pre>{ SET MODEL AND SKIN HERE scale 0 3 0 0 }</pre>
rotate	Float <rot_speed>	This function controls the stage model's rotational yaw speed.	<pre>{ SET TEXTURE HERE rotate 15 }</pre>
frames	Float <speed> Integer <frame-start> Integer <frame-end>	This sets the model's animation sequence to be played. It runs at <speed> from animation frame <frame-start> to <frame-end>. For reversed animations, set the animation sequence in reversed order.	<pre>{ SET TEXTURE HERE frames 1.5 34 67 }</pre>

## 7.0 Credits

First there is I, psychospaz who hacked together this mess. My main website can be found at <http://modscape.telefragged.com> and I can be reached at the email address [psychospaz@telefragged.com](mailto:psychospaz@telefragged.com) or [psychospaz@planetquake.com](mailto:psychospaz@planetquake.com). Now for the help I've had doing this project...

### Menu Graphics

FuShanks ([Fu's Site](#))

### Code

Vic ([Hell's Kitchen](#))  
MrG ([BeefQuake](#))  
Berserk ([Quake2Evolved](#))  
Sul ([SulQ2](#))  
Heffo ([Heffo.QuakeSrc.Org](#))  
BramBo ([Quake Standards Group](#))  
LordHavoc ([DarkPlaces](#))  
Ion\_Pulse ([007 Q2](#))  
Discoloda  
Knightmare

### Fonts

Yun

### Forum Moderators

Karen ([Pretzel Q2](#))  
RipVTide ([CotF](#))

Special Thanks to id Software for making Quake2, the rest of the Quake2 series, and every other game they've made that I've played to death.