NAME

XGL_CTX_THRESHOLD – defines a threshold value for a primitive's size, below which the primitive is simplified before rendering

SYNOPSIS

#include <xgl/xgl.h>

Xgl_ctx ctx;

xgl_object_set(ctx, XGL_CTX_THRESHOLD, Xgl_threshold *, 0);
xgl_object_get(ctx, XGL_CTX_THRESHOLD, Xgl_threshold *);

DESCRIPTION

This Context attribute is used to indicate when a primitive, or set of primitives, will be simplified before being rendered on the Device. It sets a size limit (in pixels). If the size of the current primitive is equal to or smaller than the size specified by the attribute, the primitive is *simplified* (using the rules described below) before the rendering. This is useful when the application has many small objects to render and it wants to render them as quickly as possible.

XGL_CTX_THRESHOLD is defined as a C structure of type *Xgl_threshold* that accepts three different Xgl_usgn32 threshold values for three different rendering types — *vectors*, *circles*, and *polygons*. The table below shows which drawing operator is associated with which rendering type:

vectors	*circles*	*polygons*
Markers	Circles	Rectangles
Stroke Text	Arcs	Polygons
Polylines	Ellipses	Multi_simple_polygons
Curves		Triangle strips
		Quadrilateral meshes

Each XGL primitive is provided with a bounding box. This bounding box information, after transformation to device coordinates, can be mapped to a portion of the device space and its area in pixels calculated.

If this area exceeds the corresponding threshold value, or if no bounding box is specified, the primitive is rendered normally.

If this area is less than or equal to the corresponding threshold value for the rendering type of the primitive, the primitive is simplified before being rendered. The simplification occurs as follows:

vectors are simplified by displaying only the edge between the first two vertices found by the primitive. Simplified vectors paint at least one pixel. The rules that apply for coloring lines created with **xgl_multipolyline**(3) also apply for coloring this simplified line.

circles are simplified by displaying a single pixel the same color as the conic, at a point as close to the conic center as possible.

polygons are simplified by converting them into triangles. The vertices of each triangle are the first three vertices in each polygon. If the simplified triangle is small enough, it will disappear because polygons do not overlap in XGL. The rules that apply for coloring polygons also apply for coloring this simplified triangle.

The default value is {1, 1, 1}, so all primitives whose bounding boxes have an area of one pixel or less are simplified.

This attribute is pushed by **xgl_context_push**(3)**.**

SEE ALSO

xgl_object_set(3)
xgl_object_get(3)
xgl_context_push(3)
xgl_multi_simple_polygon(3)
xgl_multiarc(3)
xgl_multicircle(3)
xgl_multi_elliptical_arc(3)
xgl_multimarker(3)
xgl_multipolyline(3)
xgl_multirectangle(3)
xgl_nurbs_curve(3)
xgl_polygon(3)
xgl_quadrilateral_mesh(3)
xgl_stroke_text(3)
xgl_triangle_strip(3)

NOTES

In a 3D environment, only the *x*-*y* projection of the bounding box is used to compare with the threshold level.

The threshold attribute can be ignored in certain circumstances. For example, the bounding box can be ignored by a particular accelerator, since it may be faster to render the primitive rather than to transform the bounding box and then test the covered area. Also, some accelerators may not implement the threshold attribute for any or all of the three rendering types.

The threshold is active only for the primitives that are completely inside the drawing area — that is, not clipped.

Each of the three threshold values is an integer.