

```
1 /*+++++
... +++++
2
3 $Id: rgbalterencoding.c,v 1.8 2001/10/02 21:15:02 guyc Exp $
4
5 Copyright (c) 2001 BeComm Corporation
6
7 Filename:
8
9     rgbalterencoding.c
10
11 Abstract:
12
13     Transforms the image's pixels from their current encoding to a new
... one. This
14     is useful for compressing an image and altering the pixel format
15     for the end display device.
16
17     A new encoding is specified as a path attribute with the name
18     "newencoding". It should be a 32 Integer.
19
20 Owner:
21
22     Andy Kutner (andyk)
23
24 -----
... ---*/
25
26 #define SOS_DEBUG_ZONE "/beads/rgbalterencoding"
27 #include <sosstrings.h>
28 #include <sosmultimedia.h>
29
30 /*+++++
... +++++
31 MACROS
32 +++++
... +++++/
33 #define RED_SIZE(A) ((A) & 0xFF)
34 #define GREEN_SIZE(A) (((A) & 0xFF00) >> (SOS_BITSPERBYTE))
35 #define BLUE_SIZE(A) (((A) & 0xFF0000) >> (2 * SOS_BITSPERBYTE))
36 #define TOTAL_SIZE(A) (((A) & 0xFF000000) >> (3 * SOS_BITSPERBYTE))
37 #define BLANK_SIZE(A) (TOTAL_SIZE(A) - (RED_SIZE(A) + GREEN_SIZE(A) +
... BLUE_SIZE(A)))
38 /* shift the total size right by 3 bytes. then shift it right by 3
... bits which is the same as dividing by 8 or a Byte .../
```

```
40 #define TOTAL_SIZE_BYTES(A) (((A) & 0xFF000000) >> (3 * SOS_BITSPERBYTE +
... 3))
41
42 /*+++++
... +++++
43 Named Constants
44 -----
... ---*/
45
46 /* Name of bead */
47 static const char BEAD_NAME[] = "rgbalterencoding";
48
49 static const char VIDEOCONTEXT_CLASS_NAME[] = "rgbcontext";
50
51 static const char NEW_ENCODING[] = "newencoding";
52
53 /*+++++
... +++++
54 Structs
55 -----
... ---*/
56 typedef struct _RGBALTERENCODING_CONTEXT {
57     SOS_IVIDEOCONTEXT *   InVideoContext;
58     SOS_IVIDEOCONTEXT *   OutVideoContext;
59     SOS_VIDEO_FORMAT      OutFormat;
60     SOS_UINT32            OutBufferSize;
61
62     SOS_UINT32            RedMask;
63     SOS_UINT32            GreenMask;
64     SOS_UINT32            BlueMask;
65
66     SOS_UINT32            RedRightShift;
67     SOS_UINT32            GreenRightShift;
68     SOS_UINT32            BlueRightShift;
69
70     SOS_UINT32            RedLeftShift;
71     SOS_UINT32            GreenLeftShift;
72     SOS_UINT32            BlueLeftShift;
73 } RGBALTERENCODING_CONTEXT;
74
75 /*+++++
... +++++
76 Context Stuff
77 -----
```

```
78
79 static
80 void
81 RgbScale_ContextDestroy(
82     RGBALTERENCODING_CONTEXT * Context
83 )
84 {
85     if (Context) {
86         SOS_Interface_Release(Context->InVideoContext);
87         SOS_Interface_Release(Context->OutVideoContext);
88         SOS_Mem_Free(Context);
89     }
90 }
91
92 static
93 RGBALTERENCODING_CONTEXT *
94 RgbScale_ContextCreate(
95     void
96 )
97 {
98     RGBALTERENCODING_CONTEXT *context;
99
100    context = SOS_Mem_Alloc(sizeof(*context));
101    if (context) {
102        SOS_memset(context, 0, sizeof(*context));
103
104        context->OutVideoContext = SOS_Interface_CreateFromClassName(
105            VIDEOCONTEXT_CLASS_NAME,
106            SOS_IVIDEOCONTEXT_ID
107        );
108
109        SOS_ASSERT_ASSUMPTION(
110            context->OutVideoContext!=NULL,
111            "Couldn't create video context"
112        );
113
114        if (!context->OutVideoContext){
115            SOS_Mem_Free(context);
116            context = NULL;
117        }
118    }
119    return context;
120 }
121 /*+++++
```

```
122 Initialization
123 ++++++
... +++*/
124
125
126 /*++
127 Routine Name:
128
129     GetInVideoContext
130
131 Routine Description:
132
133     Retrieve the video context for the incoming video stream.
134
135 Parameters:
136
137     RGBALTERENCODING_CONTEXT*    Context - [in/out]
138     A session context should already be allocated. This routine
139     fills in the InVideoContext variable.
140
141     SOS_PATH*                    Path - [in]
142     The path this session will receive images on.
143
144 Return Value:
145
146     SOS_STATUS -
147     SOS_Success on success.
148     Any other value means an error occurred.
149
150 --*/
151
152 static
153 SOS_STATUS
154 GetInVideoContext(
155     RGBALTERENCODING_CONTEXT*    Context,
156     SOS_PATH*                    Path
157 )
158 {
159     SOS_STATUS status;
160     SOS_REGOBJECT *contextObject;
161
162     SOS_DEBUGOUT_FUNC_TRACE("SetInVidoContext\n");
163
164     status = SOS_Path_AttributeGet(
165         Path
```

```
166     SOS_VIDEOCONTEXT_NAME,  
167     &contextObject  
168 );  
169  
170     SOS_ASSERT_SOFT_ERROR( SOS_SUCCEEDED(status), "Path context does not  
... contain a video context");  
171  
172     if (SOS_SUCCEEDED(status)) {  
173  
174         status = SOS_RegObject_InterfaceGet(  
175             contextObject,  
176             SOS_IVIDEOCONTEXT_ID,  
177             (void*)&(Context->InVideoContext)  
178         );  
179  
180         SOS_ASSERT_SOFT_ERROR( SOS_SUCCEEDED(status), "Video context does  
... not support required interface");  
181         SOS_RegObject_Release(contextObject);  
182     }  
183  
184     return status;  
185 }  
186  
187 /*++  
188 Routine Name:  
189  
190     SetOutVideoContext  
191  
192 Routine Description:  
193  
194     Retrives the new encoding from the Path and then creates a set of  
195     mask's and shifts used to coerse the data from the input format to  
196     the output format.  
197  
198 Parameters:  
199  
200     RGBALTERENCODING_CONTEXT*    Context - [in]  
201         The session context.  
202  
203     SOS_PATH*                    Path - [in]  
204         The Path that we are receiving messages on.  
205  
206     SOS_VIDEO_FORMAT*           InFormat - [in]  
207         The Pixel format of the incoming data.  
208
```

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