

```
1 /*+++++
... +++++
2
3 $Id: udp.c,v 1.10 2001/09/02 05:21:54 davidc Exp $
4
5 Copyright (c) 2001 BeComm Corporation
6
7 Filename:
8
9     udp.c
10
11 Abstract:
12
13     The implementation of the UDP portion of the SocketLib API. This is
... the
14     Win32 (NT/95/CE) version using the standard sockets interface exported
15     by WinSock.
16
17 Owner:
18
19     David Costanzo (davidc)
20
21 -----
... ---*/
22 #include <stdlib.h>
23 #include <stdio.h>
24 #include <string.h>
25 #include <pthread.h>
26 #include <assert.h>
27 #include <errno.h>
28
29 #include <sys/time.h>
30 #include <unistd.h>
31
32 #include <netdb.h>
33 #include <sys/socket.h>
34 #include <sys/types.h>
35 #include <netinet/in.h>
36
37 #define SOS_DEBUG_ZONE "/classes/socket/udp"
38 #include <sosstrings.h>
39 #include <sosisocket.h>
40 #include "socket.h"
41 #include "udp.h"
```

```
43 SOS_SOURCE_VERSION("$Id: udp.c,v 1.10 2001/09/02 05:21:54 davidc Exp $");
44
45 /*+++++
...
46 macros
47 -----
...
48 ---*/
49 #define ERROR_BIND_FAILED          SOS_Error
50 #define ERROR_SOCKET_FAILED        SOS_Error
51 #define ERROR_BIND_FAILED          SOS_Error
52 #define ERROR_CONNECT_FAILED       SOS_Error
53 #define ERROR_GETSOCKNAME_FAILED   SOS_Error
54 #define ERROR_SETSOCKOPT_FAILED    SOS_Error
55
56 /*+++++
...
57 types
58 -----
...
59 ---*/
60 typedef enum _UDP_CONNECTION_FUNCTION_ID {
61     UDP_CONNECTION_FUNCTION_ID_OnReceive,
62     UDP_CONNECTION_FUNCTION_ID_OnClose,
63 } UDP_CONNECTION_FUNCTION_ID;
64
65 typedef struct _UDP_CONNECTION_PARAM UDP_CONNECTION_PARAM;
66
67
68 struct _UDP_CONNECTION_PARAM {
69
70     UDP_CONNECTION_FUNCTION_ID  FunctionId;
71
72     union _UDP_CONNECTION_PARAMS {
73
74         struct _UDP_CONNECTION_PARAM_ON_RECEIVE {
75             SOS_ISOCKET_UDP *      Socket;
76             const SOS_ISOCKET_ADDRESS * SocketAddress;
77             void*                   Buffer;
78             size_t                   BufferLength;
79             SOS_FREEPROC             BufferFree;
80         } OnReceive;
81
82         struct _UDP_CONNECTION_PARAM_ON_CLOSE {
83             SOS_ISOCKET_UDP *      Socket;
```

```
84         } OnClose;
85
86     } Params;
87 };
88
89 typedef int SOCKET;
90
91 /*+++++
...
92 Constants
93 -----
...
---*/
94 /* REVISIT: it would be nice if we could check the size
95    of the message and allocate the right amount for each
96    message instead of having to keep a big buffer around
97    and copy to a buffer of the right size each time... */
98 static const size_t g_UdpRecvSize = 65535;
99
100
101 /*+++++
...
102 Data Types
103 -----
...
---*/
104
105 /* UDP socket context to be passed back and forth with caller of this
... library */
106 struct _SOS_ISOCKET_UDP {
107     SOCKET                NativeSocket;
108
109     pthread_mutex_t      Mutex;           /* non-recursive */
110     int                   RefCount;
111
112     SOS_ISOCKET_UDP_RECEIVE RecvCallback;
113     SOS_ISOCKET_CLOSED      ClosedCallback;
114     struct sockaddr_in      RemoteSockAddr;
115     SOS_ISOCKET_ADDRESS     SocketAddr;
116     void*                  UserContext;
117     SOS_BOOLEAN            IsCopy;
118
119     pthread_t              NativeRecvThread;
120 };
121
122 struct _SOS_ISOCKET_UDP_LISTEN {
123     SOS_ISOCKET_UDP      Socket;
```

```
124 };
125
126
127 /*+++++
...
128 Internal Routines
129 -----
...
130 ---*/
131 /*++
132 Routine Name:
133
134     UdpSocketCreate
135
136 Routine Description:
137
138     This routine allocates and initializes an SOS_ISOCKET_UDP struct.
139     It does not call any sockets routines.
140     The structure is returned with a reference count of 1.
141
142 Parameters:
143
144     SOCKET NativeSocket - [in]
145         The native socket handle.
146
147     SOS_ISOCKET_UDP_RECEIVE RecvCallback - [in]
148         The user-defined RecvCallback.
149
150     SOS_ISOCKET_CLOSED ClosedCallback - [in]
151         The user-defined ClosedCallback.
152
153     const struct sockaddr_in* RemoteSockAddr - [in]
154         The remote socket address.
155         This parameter is optional.
156
157     const SOS_ISOCKET_ADDRESS* SocketAddr - [in]
158         The socket address.
159
160     void* UserContext - [in]
161         The user context to pass into RecvCallback and ClosedCallback.
162
163 Return Value:
164
165     SOS_ISOCKET_UDP* -
166     A pointer to a newly allocated SOS_ISOCKET_UDP structure with
```

```
167         a reference count of 1.
168         NULL, if the structure could not be created.
169
170 --*/
171 static
172 SOS_ISOCKET_UDP*
173 UdpSocketCreate(
174     SOCKET                NativeSocket,
175     SOS_ISOCKET_UDP_RECEIVE RecvCallback,
176     SOS_ISOCKET_CLOSED     ClosedCallback,
177     const struct sockaddr_in * RemoteSockAddr,
178     const SOS_ISOCKET_ADDRESS * SocketAddr,
179     void*                  UserContext
180 )
181 {
182     SOS_ISOCKET_UDP* udpSocket;
183
184     /* allocate enough size for the larger SOS_ISOCKET_UDP_LISTEN */
185     udpSocket = malloc(sizeof(SOS_ISOCKET_UDP_LISTEN));
186     if (udpSocket != NULL) {
187
188         int initStatus;
189
190         initStatus = pthread_mutex_init(&udpSocket->Mutex, NULL);
191         if (initStatus == 0) {
192
193             udpSocket->NativeSocket    = NativeSocket;
194             udpSocket->ClosedCallback  = ClosedCallback;
195             udpSocket->RecvCallback    = RecvCallback;
196             if (RemoteSockAddr) {
197                 udpSocket->RemoteSockAddr = *RemoteSockAddr;
198             }
199             udpSocket->SocketAddr      = *SocketAddr;
200             udpSocket->UserContext     = UserContext;
201             udpSocket->IsCopy          = SOS_False;
202
203             udpSocket->RefCount        = 1;
204         }
205         else {
206             free(udpSocket);
207             udpSocket = NULL;
208         }
209     }
210
211     return udpSocket;
```

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