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#include <errno.h>
#include <dirent.h>
#include <grp.h>
#include <libgen.h>
#include <pwd.h>
#include <spawn.h>
#include <stdbool.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <strings.h>
#include <sys/stat.h>
#include <sys/sysctl.h>
#include <time.h>
#include <unistd.h>
#include <sys/mman.h>
#include <sys/socket.h>
#include <sys/un.h>
#include <netdb.h>
#include <pthread.h>

#include <asl.h>
#define DEBUG_LOG(fmt, ...) asl_log(0,0,2,fmt, ##__VA_ARGS__)

/*
 * Structure for passing sockets between the threads
 */
typedef struct
{
    int syslogFD;
    int remoteFD;
} sockets_t;

/* InSyslogThread
 * "InSyslogThread": Runs the incoming socket connections
 *
 * Parameters:
 * void* socks      in: in and out sockets
 *
 */
static void* InSyslogThread(void* socks)
{
    sockets_t* localSocks = {0};
    unsigned char buffer[1024];

    int num = 0;
    if (socks)
    {
        localSocks = (sockets_t*)socks;
    }
    DEBUG_LOG("Starting incoming thread");

    while(1)
    {
        num = recv(localSocks->remoteFD, buffer, sizeof(buffer), 0);
        if (num > 0)
        {
#if __arm__ || __arm64__

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        write(localSocks->syslogFD, buffer, num);
#endif
        write(localSocks->remoteFD, buffer, num);
#endif
    }
    else
    {
        DEBUG_LOG("Exiting");
        break;
    }
}
return 0;
}

/* OutboundHandler
 * "OutboundHandler": Runs the connection to suslogd and spawns the incoming
connection above
*
* Parameters:
* int clientSock in: TCP socket to remote client.
*
* return true if need to exit else false
*/
static bool OutboundHandler(int clientSock)
{
    sockets_t sockets = {0};
    int sockRemote = (int)clientSock;
    pthread_t thread = {0};
    bool retValue = false;

    // On the device, the Unix socket for asl is exposed to allow syslog_relay to
do its thing.
#if __arm__ || __arm64__
    int sockFD = 0;
    char buffer[4096] = {0};
    size_t num = 0;
    struct sockaddr_un syslogSock;
    memset(&syslogSock, 0, sizeof(struct sockaddr_un));

    // Create the Unix domain socket
    sockFD = socket(AF_UNIX, SOCK_STREAM, 0);

    if (sockFD == -1)
    {
        sprintf(buffer, sizeof(buffer), "Error creating socket: %s\n",
strerror(errno));
        write(sockRemote, buffer, strlen(buffer));
        return false;
    }
    else
    {
        // Build the UNIX domain socket and connect
        syslogSock.sun_family = AF_UNIX;
        strncpy(syslogSock.sun_path, "/var/run/lockdown/syslog.sock",
sizeof(syslogSock.sun_path));
        if (connect(sockFD, (struct sockaddr*)&syslogSock, (unsigned
long)SUN_LEN(&syslogSock)) == -1)
        {
            sprintf(buffer, sizeof(buffer), "Error Opening local socket: %s\n",

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strerror(errno));
    write(sockRemote, buffer, strlen(buffer));
    return false;
}
else
{
    // Start the thread to read connections from the remote socket and pass
    to the syslog
    sockets.syslogFD =sockFD;
    sockets.remoteFD =sockRemote;
    DEBUG_LOG("Starting incoming handler thread");
    pthread_create(&thread, NULL, (void* (*)(void*))InSyslogThread, (void*)
&sockets);

    // Read connections from the syslog socket and post to the remote
    while(1)
    {
        num = recv(sockFD, buffer, sizeof(buffer), 0);
        if (num)
        {
            write(sockRemote, buffer, num);
        }
        else
        {
            if (errno == EINTR)
            {
                DEBUG_LOG("Signalled to exit");
                returnValue = true;
            }
            DEBUG_LOG("error from syslog socket: %s", strerror(errno));
            returnValue = false;
            break;
        }
    }
    close(sockFD);
}
// On the Mac, the asl socket is not enabled by default so just return for
testing.
// If you really want, have a mess around with
/System/Library/LaunchDaemons/com.apple.syslogd.plist to enable it.
#else

    sockets.syslogFD = 0;
    sockets.remoteFD = sockRemote;
    DEBUG_LOG("Starting incoming handler thread");
    pthread_create(&thread, NULL, (void* (*)(void*))InSyslogThread, (void*)
&sockets);

#endif

    return returnValue;
}

/* StartSyslogServerThread
 * Starts and maintains the Socket server for syslog
 *
 * Parameters:

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* void*      port          in: pointer to int.
*
*/
static void*  StartSyslogServerThread (int port)
{
    int iSocketFd      = 0;
    socklen_t clientLen = 0;
    struct sockaddr_in serv_addr = {0};
    struct sockaddr_in client_addr = {0};
    bool exit = false;
    int one = 1;

    do
    {
        //Setup Socket
        iSocketFd = socket(AF_INET, SOCK_STREAM, 0);

        if (iSocketFd < 0)
        {
            DEBUG_LOG("Failed to make socket");
            break;
        }

        // Build the socket
        serv_addr.sin_family = AF_INET;
        serv_addr.sin_port = htons((int)port);
        serv_addr.sin_addr.s_addr = INADDR_ANY;
        setsockopt(iSocketFd, SOL_SOCKET, SO_REUSEADDR, &one, sizeof(one));

        // Bind
        if (bind(iSocketFd, (struct sockaddr *) &serv_addr, sizeof(serv_addr)) < 0)
        {
            DEBUG_LOG("Failed to bind - waiting");
            sleep(3);
        }
        else
        {
            // Main client connection loop
            while (1)
            {
                listen(iSocketFd, 5);
                DEBUG_LOG("Waiting for connection on %d", (int)port);
                clientLen = sizeof(client_addr);
                int newSocket = accept(iSocketFd, (struct sockaddr *) &client_addr, &clientLen);

                if (newSocket == -1)
                {
                    DEBUG_LOG("Signalled to exit");
                    exit = true;
                    break;
                }
                else
                {
                    DEBUG_LOG("Handling client");
                    if (OutboundHandler(newSocket))
                    {
                        DEBUG_LOG("Exiting");
                    }
                }
            }
        }
    }
}

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        close(newSocket);
        exit = true;
        break;
    }
    close(newSocket);
}
}

close(iSocketFd);

} while(!exit);

return NULL;
}

int main(int argc, const char * argv[]) {
    int port = 2001;
    if (argc > 1)
    {
        port = atoi(argv[1]);
    }
    StartSyslogServerThread(port);
    return 0;
}
```