Subject: [SOLVED] Discord bot 404 error using WebSocket, any ideas?
Posted by jjacksonRIAB on Mon, 28 May 2018 21:32:42 GMT
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HttpRequest is passed a bot token and if it authenticates correctly it passes back the address of a WebSocket. This part works. The problem is when I try to connect to the WebSocket it refuses to upgrade and returns a 404. This bot token works so you should be able to test it before I request a new one. I have successfully done this with curl and others. I don't know if it's an issue with the WebSocket headers, if a specific order is required, etc. Any advice would be greatly appreciated.

Test code:

```
#include <Core/Core.h>

using namespace Upp;

CONSOLE_APP_MAIN
{
 StdLogSetup(LOG_FILE|LOG_COUT);

 HttpRequest::Trace();
 WebSocket::Trace();

 HttpRequest req;
 req.Header("User-Agent", "MyBot (None, 0.01)");
 req.Header("Authorization", "Bot
NDUwMDA3OTY3NjIyNzU4NDIx.Dezhjw.pu-t0h9mH_zYI3v_uk6dxzO-WTE");
 req.ContentType("application/json");

 String response = req.Url("https://discordapp.com/api/gateway/bot").Execute();
 LOG(response);

 String gateway = ParseJSON(response)["url"];
 LOG(gateway);

 WebSocket ws;
 ws.Header("User-Agent", "MyBot (None, 0.01)");
 ws.Header("Authorization", "Bot
NDUwMDA3OTY3NjIyNzU4NDIx.Dezhjw.pu-t0h9mH_zYI3v_uk6dxzO-WTE");
 ws.Connect(gateway);
}
```

Log:

HTTP START
Using discordapp.com:443
Starting status 2 'Resolving host name', url: discordapp.com
HTTP Execute: Resolving host name
HTTP StartConnect
HTTP AfterConnect
Starting status 5 'SSL handshake', url: discordapp.com
HTTP Execute: SSL handshake
Starting status 6 'Sending request', url: discordapp.com
HTTP REQUEST discordapp.com:0
HTTP request:
GET /api/gateway/bot HTTP/1.1
URL: http://discordapp.com/api/gateway/bot
Host: discordapp.com
Connection: close
Accept: */*
Accept-Encoding: gzip
User-Agent: U++ HTTP request
Content-Type: application/json
User-Agent: MyBot (None, 0.01)
Authorization: Bot NDUwMDA3OTY3NjIyNzU4NDIx.Dezhjw.pu-t0h9mH_zYI3v_uk6dxzO-WTE

HTTP request body:

HTTP Execute: Sending request
Starting status 7 'Receiving header', url: discordapp.com
HTTP Execute: Receiving header
HTTP Header received:
HTTP/1.1 200 OK
Date: Mon, 28 May 2018 21:21:57 GMT
Content-Type: application/json
Transfer-Encoding: chunked
Connection: close
Set-Cookie: __cfduid=d2946871799170afe071c3c0946c8cfd51527542517; expires=Tue,
28-May-19 21:21:57 GMT; path=/; domain=.discordapp.com; HttpOnly
Strict-Transport-Security: max-age=31536000; includeSubDomains
X-RateLimit-Limit: 2
X-RateLimit-Remaining: 1
X-RateLimit-Reset: 1527542523
Via: 1.1 google
Alt-Svc: clear
Expect-CT: max-age=604800,
report-uri="https://report-uri.cloudflare.com/cdn-cgi/beacon/expect-ct"
Server: cloudflare
CF-RAY: 4223c61c2d291fca-DFW
Content-Encoding: gzip

HTTP status code: 200
Starting status 9 'Receiving chunk header', url: discordapp.com
HTTP Execute: Receiving chunk header
HTTP Chunk header: 0x4a = 74
Starting status 10 'Receiving content chunk', url: discordapp.com
HTTP Execute: Receiving content chunk
HTTP reading body 74
HTTP Out 48
Starting status 11 'Receiving content chunk ending', url: discordapp.com
HTTP Execute: Receiving content chunk ending
Starting status 9 'Receiving chunk header', url: discordapp.com
HTTP Execute: Receiving chunk header
HTTP Chunk header: 0x0 = 0
Starting status 12 'Receiving trailer', url: discordapp.com
HTTP Execute: Receiving trailer
{"url": "wss://gateway.discord.gg", "shards": 1}
wss://gateway.discord.gg
WS CLIENT DNS resolved
WS CLIENT Connect issued
WS CLIENT Blocking SSL handshake finished
WS CLIENT Sending connection request
WS CLIENT Sent 512 bytes: "GET wss://gateway.discord.gg HTTP/1.1\r\nHost: gateway.discord.gg\r\nSec-WebSocket-Key: qv+2H+B4KroFQKbVt0r+YkC3Zuc=\r\nAccept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8\r\nAccept-Language: cs,en-US;q=0.7,en;q=0.3\r\nSec-WebSocket-Version: 13\r\nSec-WebSocket-Extensions: permessage-deflate\r\nConnection: keep-alive, Upgrade\r\nPragma: no-cache\r\nCache-Control: no-cache\r\nUpgrade: websocket\r\nUser-Agent: MyBot (None, 0.01)\r\nAuthorization: Bot NDUwMDA3OTY3NjIyNzU4NDIx.Dezhjw.pu-t0h9mH_zYI3v_uk6"
WS CLIENT Block sent complete, 0 remaining blocks in queue
WS CLIENT HTTP header received: "HTTP/1.1 404 Not Found\r\nDate: Mon, 28 May 2018 21:21:57 GMT\r\nContent-Type: text/html; charset=UTF-8\r\nTransfer-Encoding: chunked\r\nConnection: keep-alive\r\nSet-Cookie: __cfduid=d4675c765c481944a6f16ee1cb7e7be9a1527542517; expires=Tue, 28-May-19 21:21:57 GMT; path=/; domain=.discord.gg; HttpOnly\r\nReferrer-Policy: no-referrer\r\nServer: cloudflare\r\nCF-RAY: 4223c61dbcc0581f-DFW\r\n\r\n"
WS CLIENT HTTP/1.1 404 Not Found
Date: Mon, 28 May 2018 21:21:57 GMT
Content-Type: text/html; charset=UTF-8
Transfer-Encoding: chunked
Connection: keep-alive
Set-Cookie: __cfduid=d4675c765c481944a6f16ee1cb7e7be9a1527542517; expires=Tue, 28-May-19 21:21:57 GMT; path=/; domain=.discord.gg; HttpOnly
Referrer-Policy: no-referrer
Server: cloudflare
CF-RAY: 4223c61dbcc0581f-DFW

WS CLIENT ERROR: Invalid server response HTTP header

Subject: Re: Discord bot 404 error using WebSocket, any ideas?
Posted by jjacksonRIAB on Thu, 31 May 2018 04:15:22 GMT
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If I do this with an ordinary browser plugin to wss://gateway.discord.gg I get back:

{"t":null,"s":null,"op":10,"d":{"heartbeat_interval ":41250,"_trace":["gateway-prd-main-1hxr"]}}

but with U++ websocket I just get a 404 error. Does anyone have any idea why this connection might be failing? I confirmed that a connection to wss://echo.websocket.org actually works. Could it be something in the URL?

Subject: Re: Discord bot 404 error using WebSocket, any ideas?
Posted by jjacksonRIAB on Thu, 31 May 2018 05:05:34 GMT
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OK, so it successfully upgrades if I use

ws.Connect("https://gateway.discord.gg", "gateway.discord.gg", true, 443);

instead of
ws.Connect("wss://gateway.discord.gg")

The browser plugin I used appears to automatically be converting all WSS GET requests from wss:// to https:// while U++ does not. I don't see where the standards say this conversion is a conformant behavior but it's happening anyway. What would be the fix in U++ source? I could change it to:

```
bool WebSocket::Connect(const String& url)
{
 const char *u = url;
 bool ssl = memcmp(u, "wss", 3) == 0;
 const char *t = u;
 while(*t && *t != '?')
  if(*t++ == '/' && *t == '/') {
   u = ++t;
   break;
  }
 t = u;
 while(*u && *u != ':' && *u != '/' && *u != '?')
  u++;
```

```
 String host = String(t, u);
 int port = ssl ? 443 : 80;
 if(*u == ':')
  port = ScanInt(u + 1, &u);

 String uri = url;

 if(port == 443) {
  uri.Replace("wss://", "https://");
 }
 else if(port == 80) {
  uri.Replace("ws://", "http://");
 }

 return Connect(uri, host, ssl, port);
}
```

But I don't know if this is the "correct" conformant behavior or if the fix belongs deeper in the U++ source. I'm not a network protocol guy.

Subject: Re: Discord bot 404 error using WebSocket, any ideas?
Posted by mirek on Mon, 20 Aug 2018 07:24:43 GMT
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Thank you, specification seems to say the ws/wss should be replaced with http/https:

> 3. The "Request-URI" part of the request MUST match the /resource
> name/ defined in Section 3 (a relative URI) or be an absolute
> http/https URI that, when parsed, has a /resource name/, /host/,
> and /port/ that match the corresponding ws/wss URI.

so the code in U++ was wrong (looks like the server the we are testing against ignores this...).

Fixed:

```
bool WebSocket::Connect(const String& url)
{
 const char *u = url;
 bool ssl = memcmp(u, "wss", 3) == 0;
 const char *t = u;
 while(*t && *t != '?')
  if(*t++ == '/' && *t == '/') {
   u = ++t;
```

```
   break;
  }
 t = u;
 while(*u && *u != ':' && *u != '/' && *u != '?')
  u++;
 String host = String(t, u);
 int port = ssl ? 443 : 80;
 if(*u == ':')
  port = ScanInt(u + 1, &u);

 return Connect(url.StartsWith("wss:") ? "https:" + url.Mid(4)
               : url.StartsWith("ws:") ? "http:" + url.Mid(3) : url,
               host, ssl, port);
}
```

Subject: Re: Discord bot 404 error using WebSocket, any ideas?
Posted by jjacksonRIAB on Mon, 20 Aug 2018 15:03:58 GMT
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Cool! Thank you, Mirek. That works for me.
