

Erriez NTP client library for Arduino
1.0.0

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Chapter 1

Erriez NTP Client library for Arduino

This is a minimized NTP Client library for Arduino to retrieve UNIX Epoch UTC from NTP time servers.

Library features

- Retrieve UNIX Epoch UTC time from network time servers
- Compatible with `time.h`
- Timeout handling

Supported hardware

- Arduino UNO with EtherShield (Wiznet W5100 Ethernet controller)
- ESP8266 WiFi
- ESP32 WiFi

Documentation

- [Online HTML](#)
- [Doxygen PDF](#)

Example output

```
{c++}
Erriez ESP8266 NTP example
Connecting to 'wifi'...OK
Epoch: 1600025290
UTC: Sun Sep 13 19:28:10 2020
```

Example ESP8266 / ESP32

```
{c++}
#include <ESP8266WiFi.h>
#include <ESP8266WiFi.h>
#include <WiFi.h>
#include <WiFi.h>
#endif

#include <ErriezNTPClient.h>

// WiFi SSID and Password
#define WIFI_SSID      ""
#define WIFI_PASSWORD  ""

// "pool.ntp.org", "time.nist.gov" or NTP server IP address
#define NTP_SERVER     "pool.ntp.org"

ErriezNTPClient ntp(NTP_SERVER);

void setup()
{
    // Initialize serial
    delay(500);
    Serial.begin(115200);
    Serial.println(F("\nErriez NTP client ESP8266 / ESP32 example"));

    // Initialize WiFi
    Serial.print(F("Connecting to '"));
    Serial.print(WIFI_SSID);
    Serial.print(F("'"));

    // Connect to your WiFi router
    WiFi.begin(WIFI_SSID, WIFI_PASSWORD);

    // Wait for connection
    while (WiFi.status() != WL_CONNECTED) {
        delay(500);
        Serial.print(".");
    }
    Serial.println("OK");
}

void loop()
{
    time_t t;

    // Get epoch
    t = ntp.getEpoch();

    // Print result
    if (t > 0) {
        Serial.print(F("Epoch: "));
        Serial.println((uint32_t)t);
        Serial.print(F("UTC: "));
        Serial.println(ctime(&t));
    } else {
        Serial.println(F("Timeout"));
    }

    delay(10000);
}
}
```

Example AVR (ATMega328 / ATMega2560)

```
{c++}
#include <Ethernet.h>
#include <ErriezNTPClient.h>

// "pool.ntp.org", "time.nist.gov" or NTP server IP address
#define NTP_SERVER     "pool.ntp.org"

ErriezNTPClient ntp(NTP_SERVER);

// Newer Ethernet shields have a MAC address printed on a sticker on the shield
uint8_t mac[] = {
    0xDE, 0xAD, 0xBE, 0xEF, 0xFE, 0xED
};
};
```

```
void setup()
{
  // Initialize serial
  delay(500);
  Serial.begin(115200);
  Serial.println(F("\nErriez NTP client AVR example"));

  // Start Ethernet and UDP
  if (!Ethernet.begin(mac)) {
    Serial.println(F("Failed to configure Ethernet using DHCP"));

    // Check for Ethernet hardware present
    if (Ethernet.hardwareStatus() == EthernetNoHardware) {
      Serial.println(F("Ethernet shield was not found."));
    } else if (Ethernet.linkStatus() == LinkOFF) {
      Serial.println(F("Ethernet cable is not connected."));
    }
  }
}

void loop()
{
  time_t t;

  // Get epoch
  t = ntp.getEpoch();

  // Print result
  if (t > 0) {
    Serial.print(F("Epoch: "));
    Serial.println((uint32_t)t);

    // A UNIX offset is needed for AVR target
    t -= UNIX_OFFSET;

    Serial.print(F("UTC: "));
    Serial.println(ctime(&t));
  } else {
    Serial.println(F("Timeout"));
  }

  delay(10000);
}
```

Library installation

Please refer to the [Wiki](#) page.

Other Arduino Libraries and examples from Erriez

[Erriez Libraries](#)

Chapter 2

Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

ErriezNTPClient	
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Chapter 3

File Index

3.1 File List

Here is a list of all documented files with brief descriptions:

src/ ErriezNTPClient.cpp	
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Chapter 4

Class Documentation

4.1 ErriezNTPClient Class Reference

NTP client class.

```
#include <ErriezNTPClient.h>
```

Public Member Functions

- [ErriezNTPClient](#) (const char *ntpServer=[NTP_SERVER](#), uint16_t timeoutMs=[NTP_RX_TIMEOUT_MS](#))
Constructor.
- time_t [getEpoch](#) ()
Get UNIX Epoch UTC time.

4.1.1 Detailed Description

NTP client class.

Definition at line 59 of file ErriezNTPClient.h.

4.1.2 Constructor & Destructor Documentation

4.1.2.1 ErriezNTPClient()

```
ErriezNTPClient::ErriezNTPClient (  
    const char * ntpServer = NTP\_SERVER,  
    uint16_t timeoutMs = NTP\_RX\_TIMEOUT\_MS )
```

Constructor.

Parameters

<i>ntpServer</i>	NTP server
<i>timeoutMs</i>	UDP receive timeout in ms

Definition at line 43 of file ErriezNTPClient.cpp.

4.1.3 Member Function Documentation

4.1.3.1 getEpoch()

```
time_t ErriezNTPClient::getEpoch ( )
```

Get UNIX Epoch UTC time.

Returns

UNIX Epoch in UTC

Definition at line 77 of file ErriezNTPClient.cpp.

The documentation for this class was generated from the following files:

- [src/ErriezNTPClient.h](#)
- [src/ErriezNTPClient.cpp](#)

Chapter 5

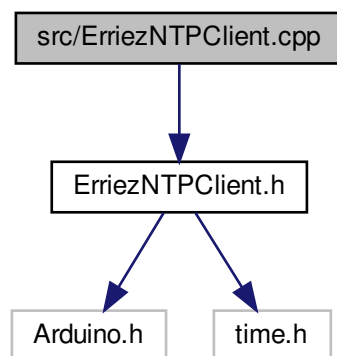
File Documentation

5.1 src/ErriezNTPClient.cpp File Reference

NTP client library for Arduino.

```
#include "ErriezNTPClient.h"
```

Include dependency graph for ErriezNTPClient.cpp:



5.1.1 Detailed Description

NTP client library for Arduino.

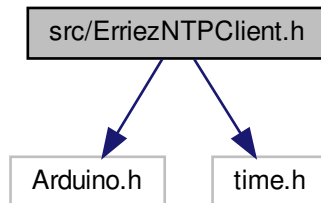
Source: <https://github.com/Erriez/ErriezNTPClient> Documentation: <https://erriez.github.io/ErriezNTPClient>

5.2 src/ErriezNTPClient.h File Reference

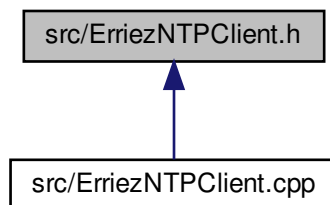
NTP client library for Arduino.

```
#include <Arduino.h>
#include <time.h>
```

Include dependency graph for ErriezNTPClient.h:



This graph shows which files directly or indirectly include this file:



Classes

- class [ErriezNTPClient](#)
NTP client class.

Macros

- #define [NTP_SERVER](#) "pool.ntp.org"
"pool.ntp.org", "time.nist.gov" or IP address
- #define [NTP_PACKET_SIZE](#) 48
NTP time stamp is in the first 48 bytes of the message.
- #define [NTP_LOCAL_PORT](#) 2390
UDP listen port.
- #define [NTP_RX_TIMEOUT_MS](#) 1000
UDP receive timeout.

5.2.1 Detailed Description

NTP client library for Arduino.

Source: <https://github.com/Erriez/ErriezNTPClient> Documentation: <https://erriez.github.io/ErriezNTPClient>

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