# **[Demo 9: How to use mDNS to resolve host names to Arduino ESP32 IP addresses](http://www.iotsharing.com/2017/05/how-to-use-mdns-to-resolve-hostname-esp32-ipaddress.html)**

**[1. Introduction](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**

[- Just imagine the situation, there is a network and your ESP32 is in that network. Now you want to communicate with ESP32, so you need to know the IP address of ESP32. There are 3 ways (or more) to know the IP address of it:  
 + Print or show the IP address of ESP32 on to Terminal, LCD, …  
 + Use a Network Scanner application (](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[Fing -  on Android and iOS](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[) to detect the IP address of ESP32   
 + Use](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[mDNS](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)** [- In this section we will use the third way mDNS.](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[mDNS](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[is stand for](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[multicast Domain Name System](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[. It resolves host names to IP addresses within small networks. Back to the situation above, you have an ESP32 connect to the network with its host name is "](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[esp32.local](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[" and there is an application that want to connect to ESP32. Using mDNS, the application on PC sends a](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[multicast message](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[to all members of network that asks the host having that name “esp32.local” to identify itself. When ESP32 received the message, it multicasts a message that includes its IP address. All machines in that network can then use that information to update their mDNS caches.  
- Beside that there is one concept that we need to know:](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[Service discovery](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[. It is the automatic detection of services offered by these devices on a network. It means if ESP32 offers http service, this service can be detected and used by the others automatically.](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)

**[Note](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[: For those who use](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[Windows](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[, because](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[Windows does not support mDNS](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[as default (except Win10) so you need to install](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[a third-party application, called Bonjour](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[, you can download it](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)[here](https://support.apple.com/kb/DL999?viewlocale=en_US&locale=en_US" \t "http://www.iotsharing.com/2017/05/_blank)[.   
And follow these steps](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)[here](https://commaster.net/content/how-resolve-multicast-dns-windows" \t "http://www.iotsharing.com/2017/05/_blank)[to install and check it.](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)

**[2. Hardware](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)** [You need not any extra hardware](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[3. Software](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**

[- In order to use mDNS in ESP32 we will include](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**["ESPmDNS.h"](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[which supplied some useful functions:](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)

[- MDNS.begin("esp32"): start mDNS with full host name is](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**["esp32.local"](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[(](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[!!!](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[when using mDNS we need to add suffix](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[".local"](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[to host). To access just use](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**["esp32.local"](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[instead of IP address](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)

[- MDNS.addService("http", "tcp", 80): Add http service (port 80) to MDNS - Service discovery](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)

[For demonstration, we will reuse the](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)[Demo 8.1](http://www.iotsharing.com/2017/05/tcp-udp-ip-with-esp32.html)[, so we change the requirement a little. In that sample instead of showing the "Hello world" when user access the webserver through IP address of ESP32, we will use the name "esp32.local".](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)

**[3.1 Node-RED model](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**

[Just Import the Json string below:](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)

**[[{"id":"866fb572.d4ebc","type":"tcp out","z":"f5a25538.3c5518","host":"esp32.local","port":"8088",](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**

**["beserver":"client","base64":false,"end":false,"name":"","x":410.5,](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**

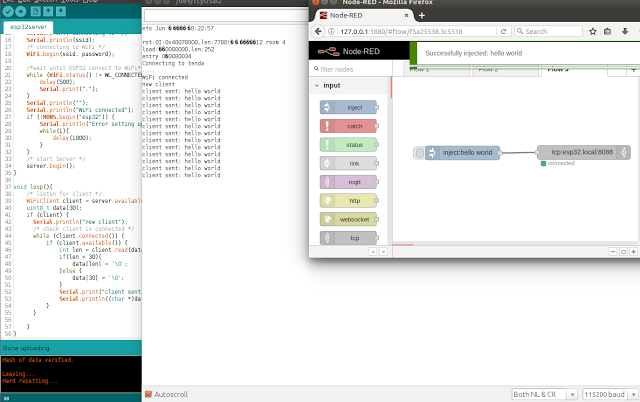
**["y":163,"wires":[]}]](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)** [You can see in this Json string the filed:](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**["host":"esp32.local"](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**

[Then click the button](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[Deploy](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[(top-right Red button) to deploy the model.](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)

**[3.2 ESP32](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)**[Create Arduino project and Save as esp32newserver with code:](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)

|  |
| --- |
| [#include <WiFi.h>](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [#include <ESPmDNS.h>](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [const char\* ssid = "tenda";](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [const char\* password = "phong707";](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [/\* create a server and listen on port 8088 \*/](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [WiFiServer server(8088);](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [void setup()](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [{](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [Serial.begin(115200);](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [Serial.print("Connecting to ");](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [Serial.println(ssid);](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [/\* connecting to WiFi \*/](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [WiFi.begin(ssid, password);](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [/\*wait until ESP32 connect to WiFi\*/](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [while (WiFi.status() != WL\_CONNECTED) {](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [delay(500);](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [Serial.print(".");](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [}](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [Serial.println("");](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [Serial.println("WiFi connected");](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [if (!MDNS.begin("esp32")) {](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [Serial.println("Error setting up MDNS responder!");](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [while(1){](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [delay(1000);](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [}](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [}](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [/\* start Server \*/](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [server.begin();](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [}](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [void loop(){](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [/\* listen for client \*/](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [WiFiClient client = server.available();](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [uint8\_t data[30];](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [if (client) {](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [Serial.println("new client");](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [/\* check client is connected \*/](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [while (client.connected()) {](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [if (client.available()) {](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [int len = client.read(data, 30);](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [if(len < 30){](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [data[len] = '\0';](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [}else {](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [data[30] = '\0';](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [}](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [Serial.print("client sent: ");](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [Serial.println((char \*)data);](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [}](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [}](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [}](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html)  [}](http://www.iotsharing.com/2017/05/how-to-use-arduino-esp32-to-display-oled.html) |

**4. Result**

[](https://1.bp.blogspot.com/-HzbgW7jJtBk/WSAlp6VGrzI/AAAAAAAAD4k/ue-tjxqDzu8GU23JF8VKzJ0XYRF8CwZ4ACLcB/s1600/internet15.png)