Auto Timezone Detection

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ABSTRACT—For normal operation and record data, device must have an accurate time for different countries and regions. In order to solve this problem, we have implemented a mechanism to automatically detect the time zone, and the device will get the time zone according to the current network location.

I - Introduction

The time zone is the same time definition of the region on Earth. In 1863, the concept of time zone was first used. The time zone partially solves this problem by setting a standard time for the region.

The machines on the network basically use NTP (Network Time Protocol) to synchronize their clocks over the Internet. There are many NTP servers on the network that can synchronize the correct time.

II - How To Get Timezone

In order to synchronize the correct time with the NTP server, giving a corresponding time zone is the first necessary condition. To determine a time zone, we must have latitude and longitude.

We use IP (Internet Protocol) address as an anchor point to obtain latitude and longitude. When this information is available, we can use this information to get the time zone.

III - Manual To Automatic

Before we can automatically detect the time zone mechanism, user must manually set or select the time zone of the device through the GUI. This is inconvenient for the user setup or the data record. If the device itself can automatically get the time, user doesn't need to set it manually. It is the fastest and most convenient for the device itself to automatically query the time zone via the network. So we implemented a mechanism to automatically detect the time zone.

IV - Timezone Detection Mechanism

There are some methods on the network to achieve some of the conditions, but can not directly get the results we need. So we integrate the above methods to complete our mechanism.

Our entire implementation mechanism requires the following three conditions.

1. List of global time zones

2. IP address

3. The server that can check the time zone after giving latitude and longitude

The first two pieces of information can be provided through pre-preparation and the device itself. There are many servers on the Internet that provide time zone check services. We can get results by providing the corresponding information to the server. Then update the acquired time zone information to the device, and the implementation of this method is completed.

V - Conclussion

The way to set the time zone only through the GUI can also be replaced by automatic acquisition. With this automatic detection time zone mechanism, the device can automatically get the correct time. It is more convenient for the data record and system operation.

References

1. https://www.ntppool.org

2. https://developers.google.com/time/