CServerDemo User Guide

CServerDemo is the special software designing for testing LoRaWAN node, gateway and system by ManThink. By the help of CServerDemo, users could fast and deeply understand the whole system of LoRaWAN, test the performance/function of gateway and node, and parts of pre-developing work, so as to speed up users application from R&D.

CServerDemo must Run with the application Sever which supplied by ManThink.

Catalogue

1. Software Installation

1.1 Microsoft .NET Framework4.5 Installation

The running environment of CServerDemo demand on .net framework, please confirm the computer has the .NET Framwork4.5. Otherwise, please download Microsoft .NETFramework4.5 Setup in the following address:

https://www.microsoft.com/zh-cn/download/details.aspx?id=30653

1.2 sqlite Database Installation

The sqlite database is divided into 32-bit and 64-bit OS versions:

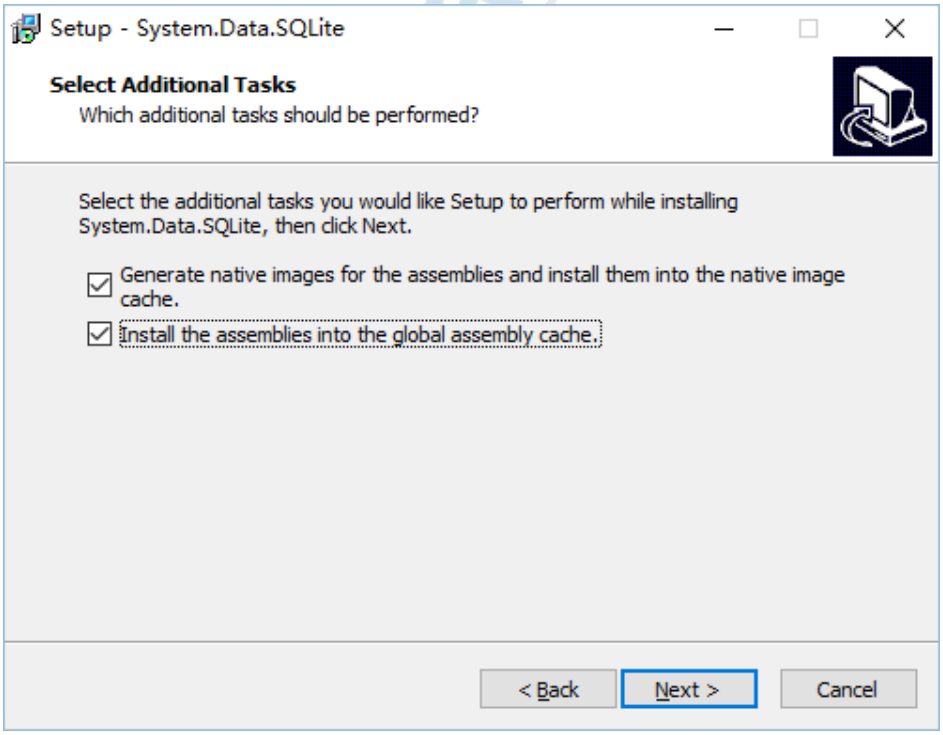
Please install the following version for 64-bit OS

sqlite-netFx451-setup-bundle-x64-2013-1.0.99.0；

Please install the following version for 32-bit OS

sqlite-netFx451-setup-bundle-x86-2013-1.0.98.0。

Notice: two options inside picture 1-2 need be chosen.



Picture 1-2 Database Installation Option

1.3 CserverDemo Installation

CserverDemo is divided into 32-bit and 64-bit versions; please install setup.exe under the CServerX64 Folder for 64-bit OS or setup.exe under the CServerX86 Folder for 32-bit OS.

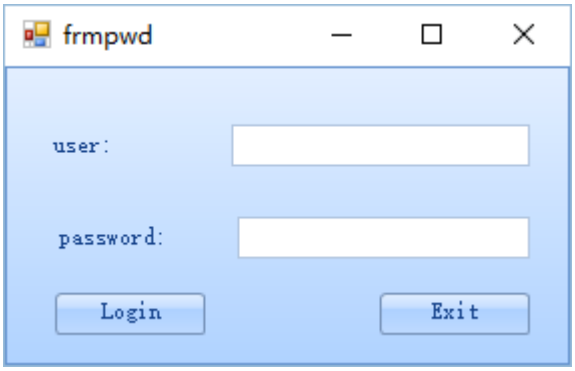
Picture 1-3 Database Installation Option

1.4 User Login

CserverDemo's running require the accessing to network. The first running of CserverDemo needs login. As the picture 1-4, normal user needs fill in the following information:

Username：mornitor@manthink.cn

password：manthinkmornitor

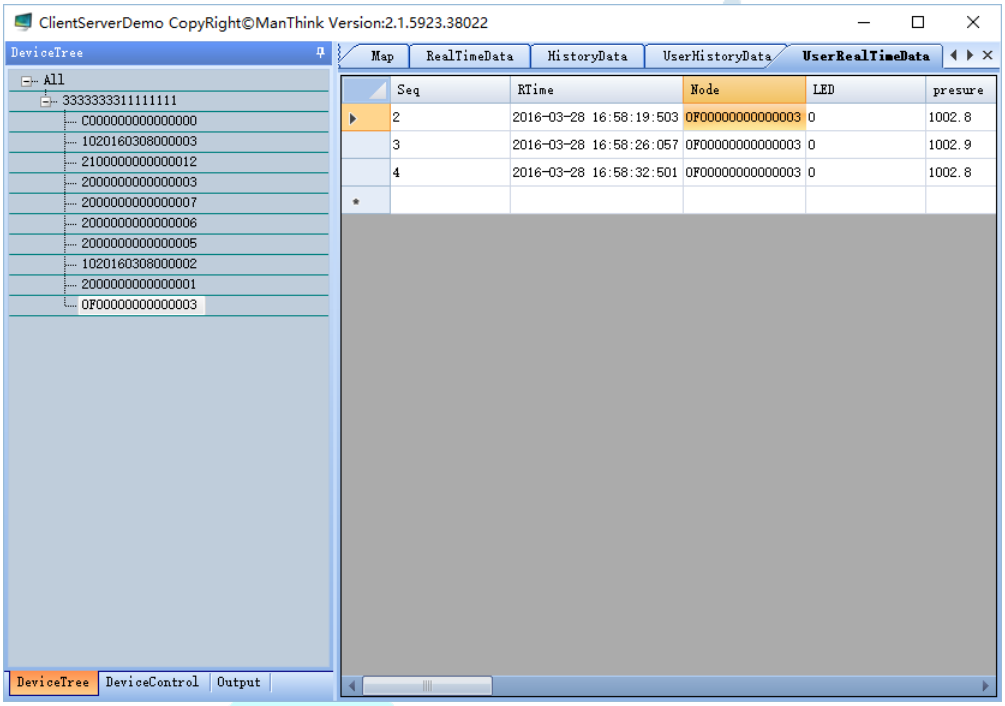


Picture 1-4 Login Interface

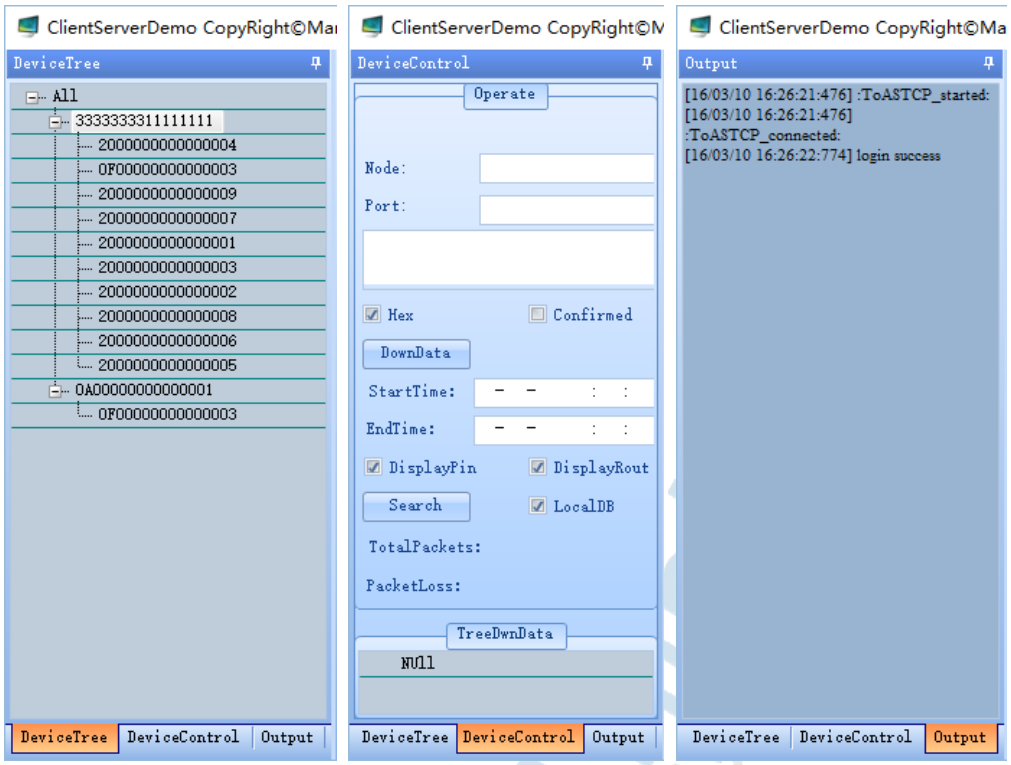
2. Software Interface

2.1 Default Interface

The default interface of CserverDemo is as the picture 2-1-1, which is divided into two parts. The left part includes three interfaces DeviceTree, DeviceControl, Output as the picture 3-1-2; while the right part includes five Tables interfaces RealTimeData, UserRealTimeData, HistoryData, UserHistoryData and Map. Their functions are described as the following:



Picture 2-1-1 Software Default Interface



Picture 2-1-2 DeviceTree DeviceControl Output

2.2 DeviceTree

Display the online gateways and nodes.

As the picture 2-1-2 shown, the chosen number ‘3333333311111111’ is the MAC address of a certain online gateway and the number ‘2000000000000004’ is the first node ID under this gateway, the second node ID is ‘0F00000000000003’, and so on.

2.3 DeviceControl

The device control and data query interface sends the downlink data to node by ‘DownData’ button.

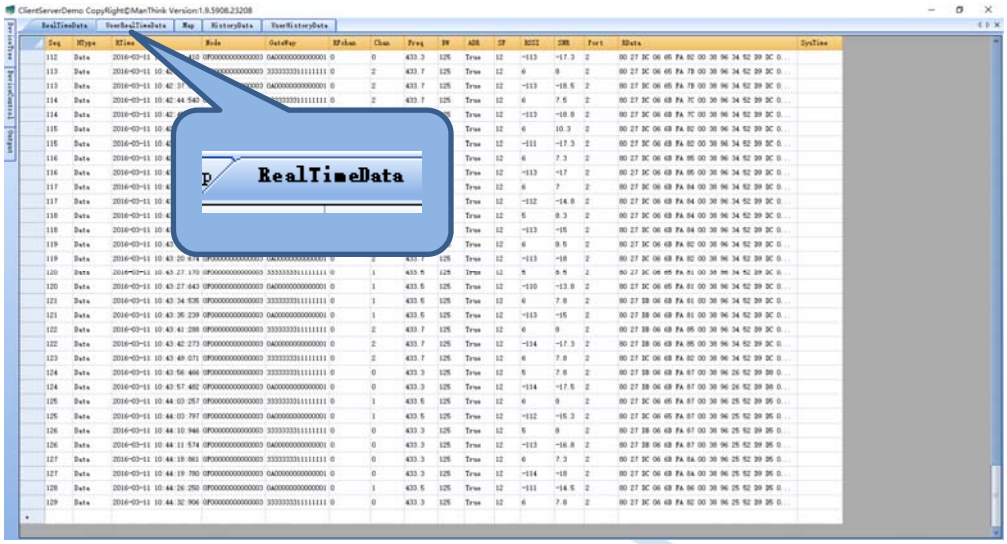
After setting ‘StartTime’ and ‘EndTime’, user could get the node historical data by sheet table or map in the right interface by clicking ‘Search’ button.

2.4 Output

Output interface shows the outputting information, including software running status, service accessing status, uplink/downlink data status and other related information for feed backing LoRaWAN system running status.

2.5 RealTimeData

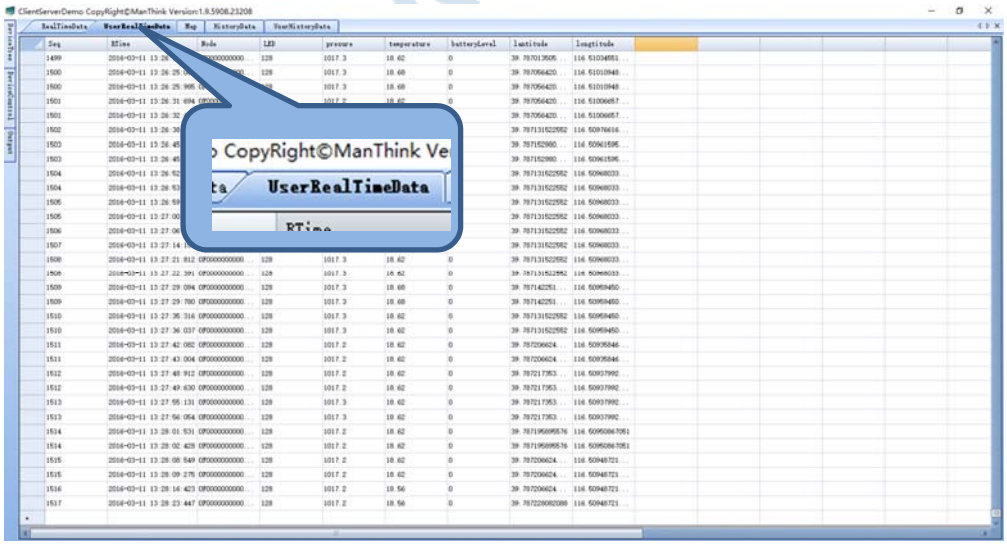
RealTimeData interface is shown as the picture 2-5 and displays the real-time uplink data from node in the sheet, which includes 16 characters.



Picture 2-5 RealTimeData Interface

2.6 UserRealTimeData

UserRealTimeData interface is shown as picture 2-6-1 and displays the parsed real-time user data by defaulting regulations. The default software has the data parsing function for EV302 node. As the picture 2-6-2 shown, data includes 9 characters.

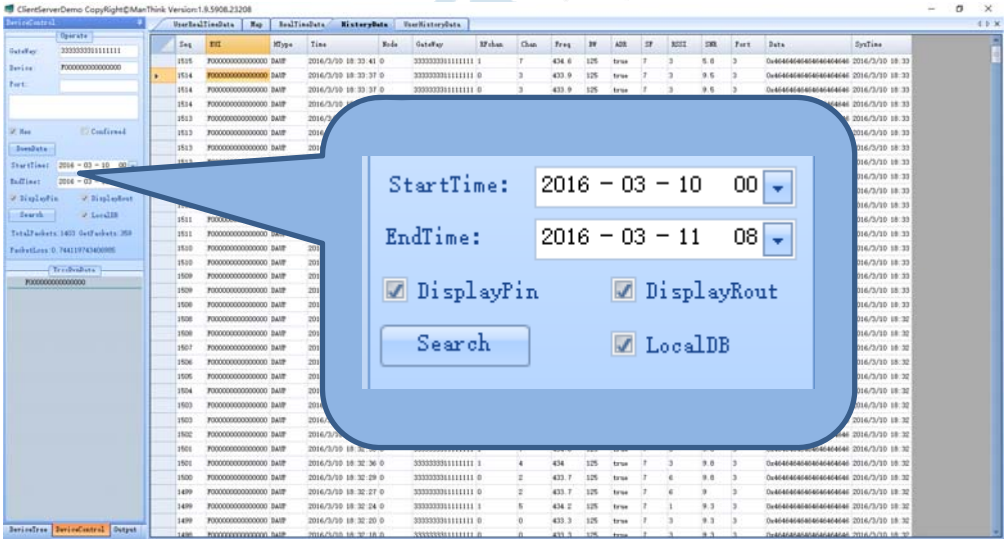


Picture 2-6-1 UserRealTimeData Interface

Picture 2-6-2 EV302 Node

2.7 HistoryData

HistoryData interface shows historical data saved by CServerDemo, whose data options are similar with RealTimeData interface. The starting – ending time of historical data could be set by 'StartTime' and 'EndTime' buttons in the left DeviceControl window, then press 'Search' button.



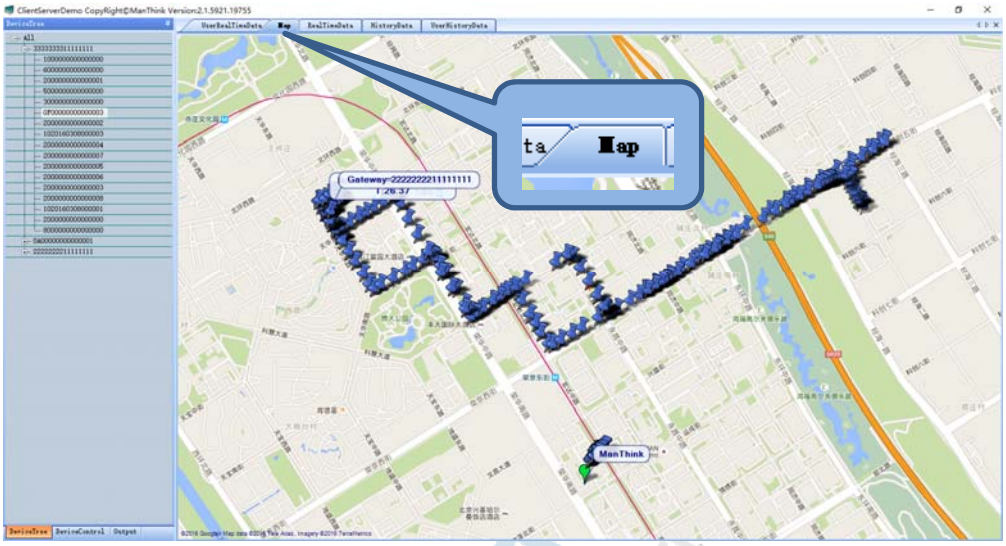
Picture 2-7 HistoryData

2.8 UserHistoryData

UserHistoryData displays the parsed historical data by defaulting regulations, whose data options are similar with UserRealTimeData interface, and reserved 14 blank characters column1~column14 for following-up new parsed data.

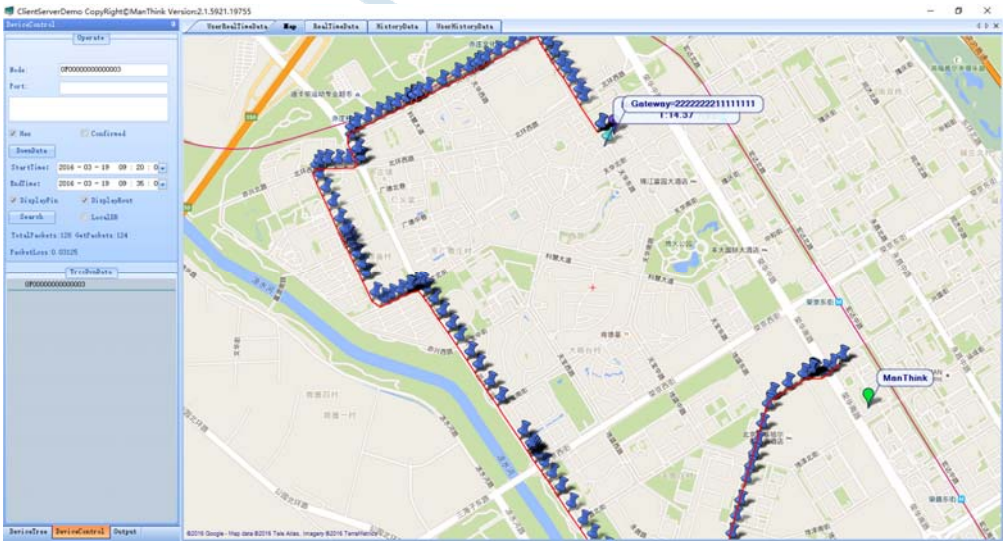
2.9 Map

Map viewer shows the position of ManThink by default and online gateways. In the DeviceTree interface, choose the online EV302 node (MAC address: 0F00000000000003), then the corresponding nodes location will be displayed in the map viewer (the closest 1000 nodes by default), shown as the picture 2-9-1.



Picture 2-9-1 Map

There are two methods to display the node position: DisplayPin and DisplayRout are corresponding to options. As the picture 2-9-2, DisplayPin and DisplayRout are both chosen, so node locations are displayed by pin and port simultaneously.



Picture 2-9-2 Map

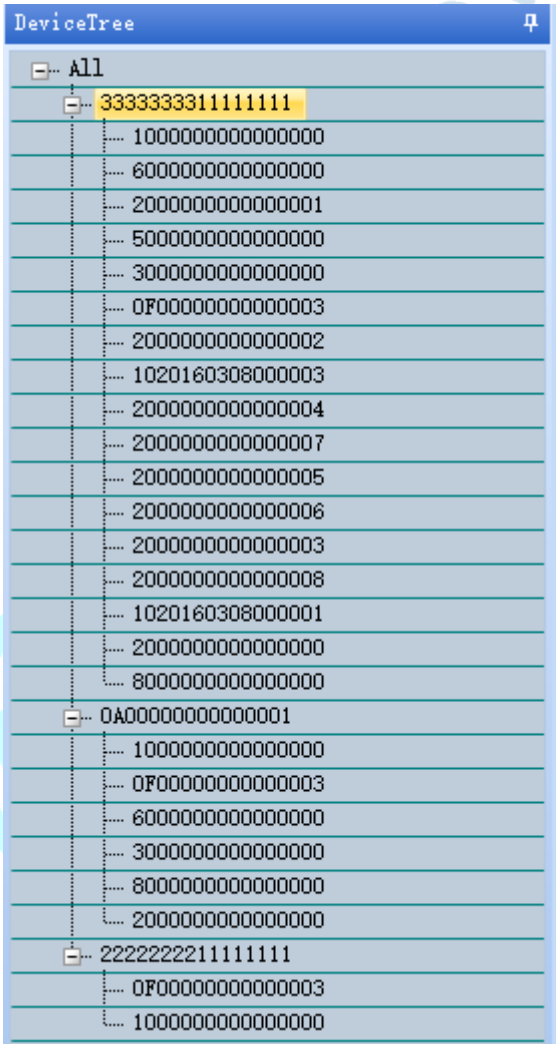
Notice: DisplayPin and DisplayRout results display after the next click.

3. Function

3.1 Data Browsing and Querying

- **Monitoring all the online gateway and node**

Switch to the DeviceTree Interface in the left, click + to spread menu, and all gateways will be displayed. As the Figure 3-1-1, there are three online gateways in the DeviceTree interface, and their MAC addresses are: 3333333311111111, 0A00000000000001, 2222222211111111; and the MAC addresses of 25 nodes are: 1000000000000000, 6000000000000000 and so on.



Picture 3-1-1

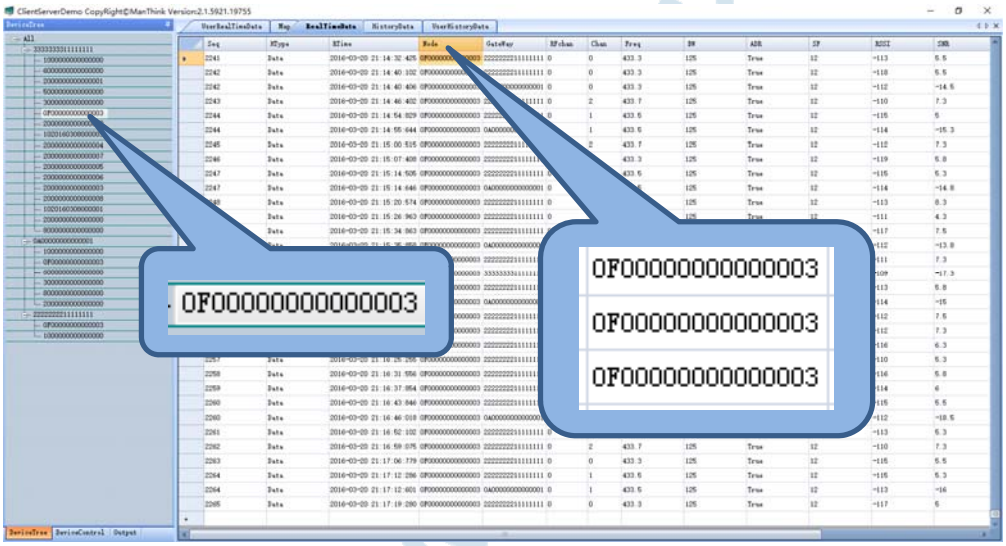
- **Monitoring real data of all online devices**

Click the 'RealTimeData' interface, and the real data of all nodes will be displayed as the previous picture 2-5;

- **Check unparsed real time data of a certain device.**

Click a certain gateway in the DeviceTree interface, and the new displaying data of RealTimeData interface will be only from this certain gateway without others.

Similarly, click a certain node in the DeviceTree, and the new displaying data of RealTimeData interface will be only from this certain node and no others. As the picture 3-1-2, the node 0F00000000000003 has been chosen, and then the data from this node will be displayed only.



Picture 3-1-2

- **Check parsed real time data of the device**

Click the UserRealTimeData interface, the parsed real time data of all nodes are rolling displayed. As the picture 3-1-3, real time data of EV302 keep rolling display and have been parsed to pressure, temperature and so on.

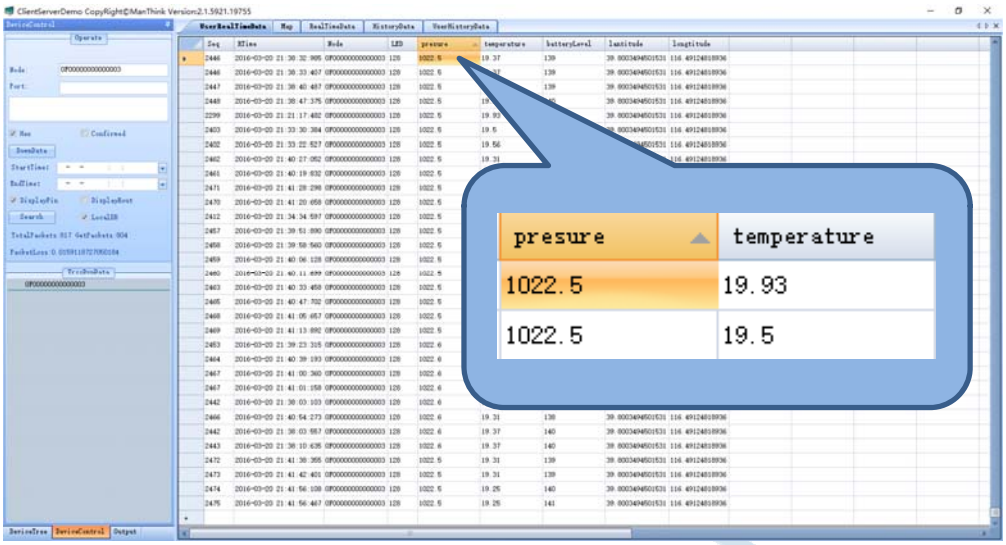


图 3-1-3

- **Check the real time moving trace of EV302 in the map**

Switch to the DeviceTree Interface in the left and chose the node EV302 0F00000000000003 from devices. The latest moving trace of this node will be displayed in the Map, as the picture 2-9, the latest 1000 data of this chosen data will be displayed by default in the Map.

Notice: when EV302 couldn't receive GPS, the uplink data could also not shape the trace and the location will be displayed as 0 for longitude and latitude in the world map.

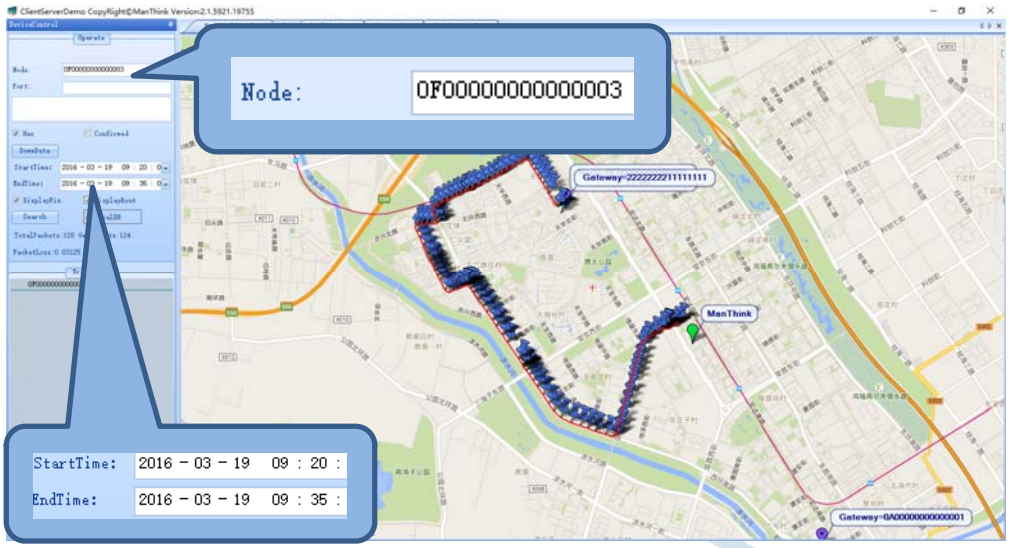
If the uplink locations are overlapped, the trace in the map is also overlapped to one point.

- **Check the trace, unparsed historical data, parsed historical data of EV302 0F00000000000003 during 2016-3-19 9:20 to 2016-3-19 9:35**

1）Switch to the DeviceTree Interface in the left, choose the EV302 0F00000000000003 from devices.

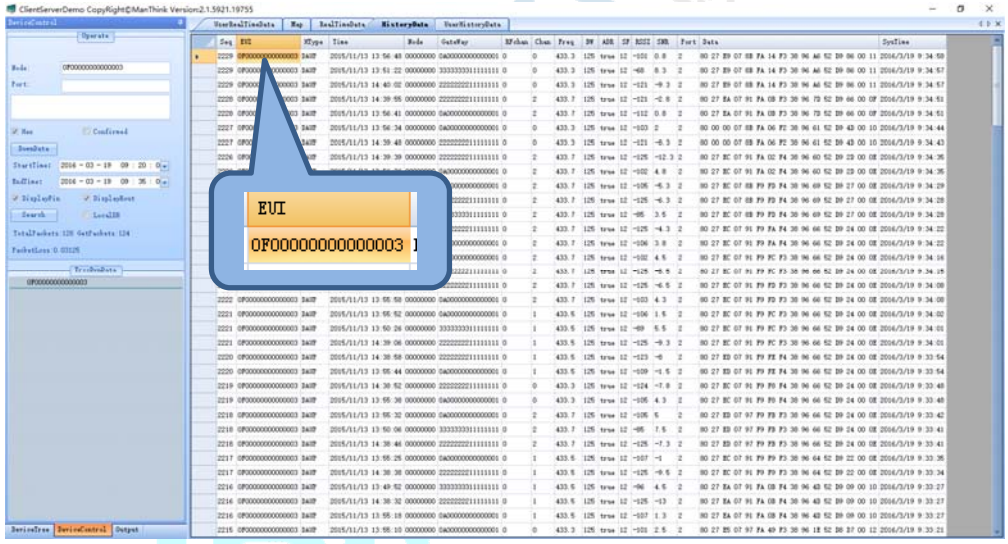
2）Switch to the DeviceControl Interface in the left, and then the blank box of the device has been automatically filled by 0F00000000000003; set StartTime and EndTime to 2016-3-19 9:20 and 2016-3-19 9:35, then click Search button.

3）And now switch to the Map interface of the right, the assigning time trace of EV302 0F00000000000003 will be displayed as the picture 3-1-4.



Picture 3-1-4 Historical Trace

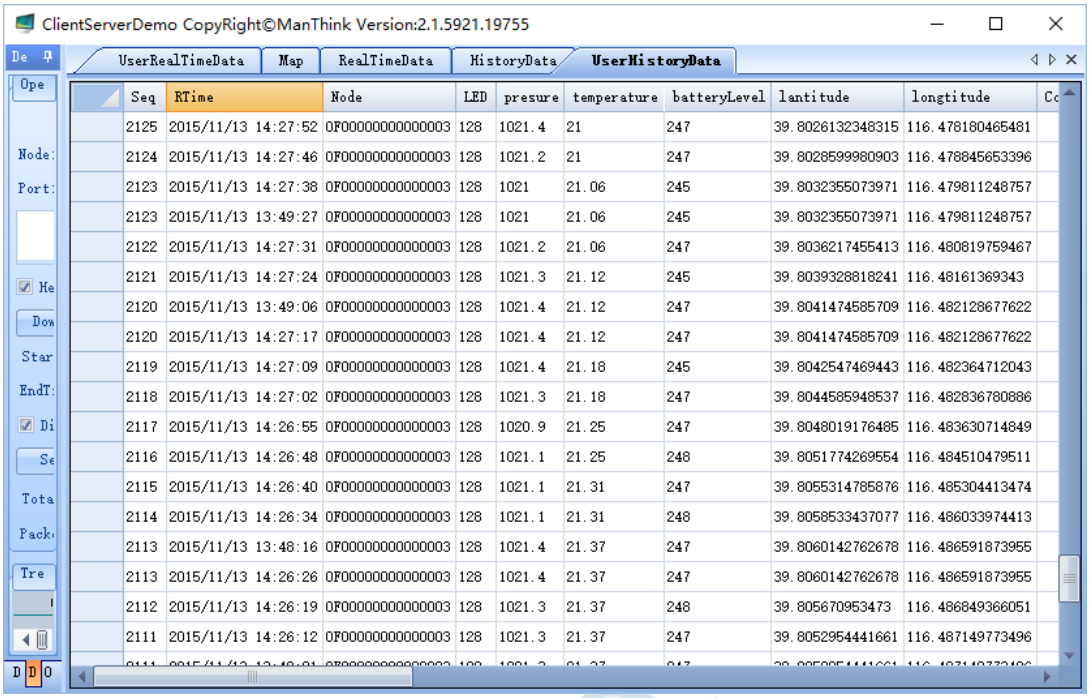
4) Switch to the HistoryData Interface in the right, the unparsed data of assigning time of EV302 0F00000000000003 will be displayed as the picture 3-1-5.



Picture 3-1-5 Unparsed historical Data

Notice: in the HistoryData interface, EUI means the MAC address of the node when displaying unparsed historical data; the character of Node is reserved.

5) Switch to the UserHistoryData Interface in the right, the parsed result of assigning time of EV302 0F00000000000003 will be displayed as the picture 3-1-6, including temperature, pressure longitude, and latitude and so on.



Seq	RTime	Node	LED	presure	temperature	batteryLevel	lantitude	longtitude
2125	2015/11/13 14:27:52	0F00000000000003	128	1021.4	21	247	39.8026132348315	116.478180465481
2124	2015/11/13 14:27:46	0F00000000000003	128	1021.2	21	247	39.8028599980903	116.478845653396
2123	2015/11/13 14:27:38	0F00000000000003	128	1021	21.06	245	39.8032355073971	116.479811248757
2123	2015/11/13 13:49:27	0F00000000000003	128	1021	21.06	245	39.8032355073971	116.479811248757
2122	2015/11/13 14:27:31	0F00000000000003	128	1021.2	21.06	247	39.8036217455413	116.480819759467
2121	2015/11/13 14:27:24	0F00000000000003	128	1021.3	21.12	245	39.8039328818241	116.48161369343
2120	2015/11/13 13:49:06	0F00000000000003	128	1021.4	21.12	247	39.8041474585709	116.482128677622
2120	2015/11/13 14:27:17	0F00000000000003	128	1021.4	21.12	247	39.8041474585709	116.482128677622
2119	2015/11/13 14:27:09	0F00000000000003	128	1021.4	21.18	245	39.8042547469443	116.482364712043
2118	2015/11/13 14:27:02	0F00000000000003	128	1021.3	21.18	247	39.8044585948537	116.482836780886
2117	2015/11/13 14:26:55	0F00000000000003	128	1020.9	21.25	247	39.8048019176485	116.483630714849
2116	2015/11/13 14:26:48	0F00000000000003	128	1021.1	21.25	248	39.8051774269554	116.484510479511
2115	2015/11/13 14:26:40	0F00000000000003	128	1021.1	21.31	247	39.8055314785876	116.485304413474
2114	2015/11/13 14:26:34	0F00000000000003	128	1021.1	21.31	248	39.8058533437077	116.486033974413
2113	2015/11/13 13:48:16	0F00000000000003	128	1021.4	21.37	247	39.8060142762678	116.486591873955
2113	2015/11/13 14:26:26	0F00000000000003	128	1021.4	21.37	247	39.8060142762678	116.486591873955
2112	2015/11/13 14:26:19	0F00000000000003	128	1021.3	21.37	248	39.805670953473	116.486849366051
2111	2015/11/13 14:26:12	0F00000000000003	128	1021.3	21.37	247	39.8052954441661	116.487149773496

Picture 3-1-6 User Historical Data

Notice: the parsing algorithm for different node information should be defaulted beforehand, otherwise, there are only unparsed data will be displayed but not useful parsed data.

The unrelated data of EV302 will not be displayed in the Map.

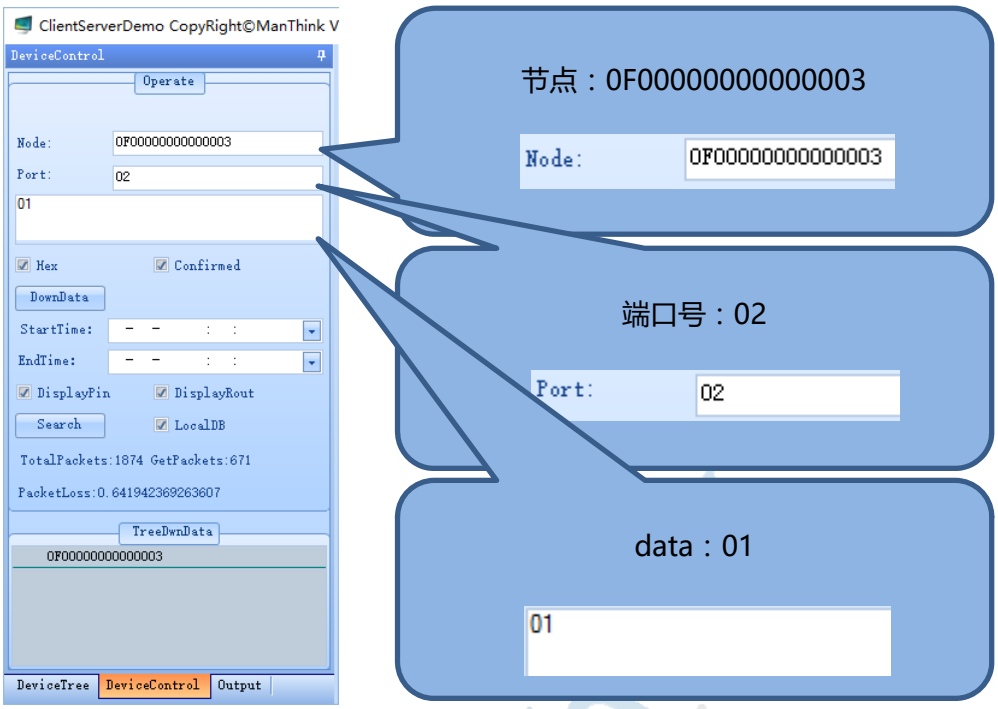
The setting function of data parsing is reserved, please notice the following upgrade.

3.2 Downlink Data

- **Downlink operation from CserverDemo, turn on the EV302 LED light**

Switch to the DeviceTree interface in the left, chose the EV302 0F00000000000003 from devices, and the Node box of DeviceControl interface has been automatically filled by 0F00000000000003.

Fill the LED controlling number 02 in the Port box of EV302; fill the number (01 mean On) in the box under the Port; click Hex and Confirmed buttons; and finally click DownData button to confirm operation. After one communication period, the LED of EV302 will be turned on.



Picture 3-2 Downlink Data Interface

Notice: when controlling EV302, the port 02 is defined as the status of LED controlling port, and this port number could be defined for other functions, meanwhile the downlink data 01 could also be defined for other functions.

4. Key Work List

4.1 Data Character

Seq	data sequence, automatic accumulation, like device reset will restart from 1
HType	Data type
RTime	the real time of gateway
Node	Node means MAC address in RealTimeData、UserRealTimeData、UserHistoryData and DeviceControl interfaces, but inactive in HistoryData interface
GateWay	MAC address of gateway, global unique;
RFChan	signal channel group, automatically assigned by gateway
Chan	signal channel number
Freq	uplink data frequency
BW	signal data bandwidth, the parameter of LoRa modulation
ADR	adaptive data rate, True is On, False is Off
SF	preading factor, the parameter of LoRa modulation
RSSI	the receiving field intensity
SNR	Signal-noise ratio
Port	port number of LoRaWAN
RData	unparsed hexadecimal data
SysTime	Cserver system time, inactive in RealTimeData interface
EUI	MAC address of node in HistoryData interface
LED	the status of LED controlled by Cserver, 01 is On and 00 is Off;

presure	pressure of EV302
temperature	temperature of EV302
batteryLevel	battery power, minimum power is 1, maximum is 255, recharging is 0;
lantitude	latitude of EV302
longtitude	longitude of EV302

4.2 Function Window

frmpwd	Login interface, fill in information in the first login
DeviceTree	devices list interface display all online gateways and nodes by tree
DeviceControl	device control interface downlink data to node by certain format and historical data query
OutPut	information output interface determine the system state
RealTimeData	real time data interface display 16 characters data
HistoryData	Historical data interface display the previous data by need
UserHistoryData	Historical user data interface display the previous user data by need
Map	Map interface display the EV302 location data

4.3 Other

Hex	Displaying hexadecimal data if activating
Confirmed	Software send confirmed frame data if activating, otherwise, unconfirmed frame
DownData	data downlink button
StartTime	data starting time when querying, fill in the hand or drop-down menu
EndTime	data ending time when querying, fill in the hand or

	drop-down menu
DisplayPin	the node location trace will be displayed by pin if activating
DisplayRout	the node location trace will be displayed by route if activating
Search	query history data
TotalPackets	total transmitting packages when testing package loss;
GetPackets	the successful transmitting packages when testing package loss;
PacketLoss	package loss ratio by decimal=（TotalPackets- GetPackets）/ TotalPackets；
EV302	The sensor node made in ManThink is designed for user simulation test including temperature, pressure, longitude, latitude and so on.

5. Contact

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