## Guideline to configure the transparent communication with MQTT mode of Ethernet IP device for 4G Router



## The following uses a Local Server test environment as an example, shown as Figure 1.

Figure1

1.Connect the LAN port of the router to the computer, and set the automatic dhcp mode for the computer Network Ineterface Card, and ensure that the computer can obtain the address 192.168.1.x, netmask 255.255.255.0( with dhcp mode or static ip).



2.Open the browser, type the default IP address of the router with 192.168.1.1, then press Enter. And then input the username/password with admin/admin to login the Router.



3.After logging , you will see overview details about the router system, including the software/hardware version, product model, product id, networking mode, and MAC address, etc.

System Status 🗸 🗸	Overview x Smartli	ink 🗙			₩	Tab operation
Overview	Status					
Routes	Status					
System Log	System					
Kernel Log	Router Name	M2M	Product Name	ZR2721S		
Realtime Graphs	Firmware Version	Premium Wireless Router v2.5.221125	Product ID	1120ZR21908270518		
	Local Time	Mon Nov 28 19:44:33 2022	Hardware Class	Single Model Single Card		
asic Network >	Uptime	0h 8m 39s	MAC Address	34:0a:68:24:b8:ec		
dvanced Network >	Load Average	1.06, 1.11, 0.58	WAN Mode	4G/5G and Wired		
PN Configuration >						
system Management >	MobileWAN Status					
	Interface	Mobile Network1				
ogout	Gateway	2				
	IPv4Address	2°				
	DNS	₹.				
	Modem Type	LTE/WCDMA/TD	SCDMA/EVDO/CDMA/EDGE/G	PRS/GSM		
	Modem IMEI	8688210411339	92			
	Modem IMSI	-				
	Modem ICCID					
	Network Operator	•				

4. Check the LAN IP address of the router (you can also change the default IP for specific using )and PC address directly connected to router(for later testing), shown as follows.

System Status	>	📢 Overview 🗙 Sma	artlink × Wired Network ×				Þ	Tab operat
Basic Network								
Switch		WAN LAN M	GT					
Hostnames		Interfaces - LAN						
Static Routes		On this page you can several network interf	configure the network interfac aces separated by spaces. Yo	ces. You can bridge se ou can also use <u>VLAN</u> I	veral interfaces by t notation INTERFACE. V	icking the "bridge interfaces" field and ente LANNR ( <u>e.g.</u> : eth0. 1).	the nan	nes of
Wired Network		Ormer an Oraf						
Mobile Network		Common Configur	ation					
Wireless Network		General Setup	Advanced Settings					
Static address			Status	Collecting data				
Advanced Network			Protocol	Static address	~			
VPN Configuration			IPv4 address	192.168.1.1/24	+			
System Manageme	nt≻		Use custom DNS servers		+			
Logout			IPv6 assignment length	64	~			
				Assign a part of giver	n length of every pub	lic IPv6-prefix to this interface		
			IPv6 assignment hint					
				Assian nrefix narts us	sing this hexadecim:	al subprefix ID for this interface		

System Status 🗸 🗸	Overview × Smartlink × Wired Network ×		➡ Tab operation -
Overview	eti	MAC Address: 34:0A:68:24:88:EC Netmask: 255.255.255.255 Gateway: 0.0.0.0	
System Log	Active Connections	160 / 16384 (0%)	
Kernel Log			
Realtime Graphs	Memory		
Basic Network >	Total Available 7	2172 kB / 1236 <mark>8</mark> 8 kB (58%)	
	Free 6	4404 kB / 123688 kB (52%)	
Advanced Network >	Buffered	7768 kB / 123688 kB (6%)	
VPN Configuration >			
System Management >	DHCP Leases	<b>1</b>	
Logout	Hostname IP Address	MAC-Address Leasetime rem	naining
	mc007 192.168.1.236	E4:E7:49:1A:A7:F3 11h 49m 2	!ls
	Generic MAC80211 802.11bgn Wireless Controller (radio0)	SSID: ZR2721S-24b8ec Mode: Master Channel: 6 (2.437 GHz) 0% BSSID: 340A;69::24:08:EE Encryption: mixed WPA/WPA2 PSK (CCMP) Uptime: 0h 10m 57s SSID: default Mode: Client Channel: 6 (2.437 GHz) Bitrate: ? Mbit/s Wireless is disabled or not associated	

5.Confirm the WAN interface address of the router owns the same subnet network as the MQTT server( they can ping each other well). They are as follows.

System Status 🛛 🗸	44	Smartlink 🗙	Overview 🗙			₩	Tab operation <del>•</del>				
Overview		Network					*				
Routes		WiredWAN S	tatus		Type: dhcp						
System Log					MAC Address: 34:00.68:24:B8:EC Matmask: 255.255.255.0 eth1 Gateway: 192.168.10.1 DNS 1:20.26:124:23						
Kernel Log				eth							
Realtime Graphs					Expires: 23h 57m 55s Connected: 0h 2m 5s						
Basic Network >		Active Conne	ections	Γ	224 / 16384 (1%)						
Advanced Network >											
VPN Configuration >		Memory					- 1				
System Management >		Total Availab	ole	70	0668 kB / 1236 <mark>88 kB (57%)</mark>						
Logout		Free		62	2324 kB / 123688 kB (50%)						
		Buffered		٤ 📕	3344 kB / 123688 kB (6%)		_				
		DHCP Lease	S								
		Host	name	IP Address	MAC-Address	Leasetime remai	ning				
		mc	007	192.168.1.236	E4:E7:49:1A:A7:F3	11h 57m 52s	3				

System Status >	Smartlink × Overview × Network Diagnostics ×	➡ Tab operation											
Basic Network >	Network Diagnostics												
Advanced Network >													
VPN Configuration >	Network Utilities MOTT Test Server IP												
System Management ~	10.10.11.13												
System	IPv4 V PING IPv4 V TRACEROUTE NSLOOKUP												
Administration													
Backup / Flash Firmware	PING 10.10.11.13 (10.10.11.13): 56 data bytes												
Network Diagnostics	64 bytes from 10.10.11.13: seq=0 ttl=63 time=21.731 ms 64 bytes from 10.10.11.13: seq=1 ttl=63 time=0.937 ms												
Device Reboot	64 bytes from 10.10.11.13: seq=2 ttl=63 time=1.074 ms 64 bytes from 10.10.11.13: seq=3 ttl=63 time=1.362 ms												
Logout	04 bytes from 10.10.11.13: seq=4 tt1=63 time=0.789 ms 10.10.11.13 ping statistics 5 packets transmitted. 5 packets received. 0% packet loss												
	round-trip min/avg/max = 0.789/5.178/21.731 ms												

6. Start to configure smartlink usage.

6.1 to config 'cloud'/'uplink device' option: set it to MQTT Client mode, select protol to PASS-Throuth and type MQTT Server IP and port/username/password/Subscribe topic/report topic all well.

System Status	>	44	Overview 🗙	Smartlink 🗙	Wired Network x						₩	Tab operation -
Basic Network			General C	ollection Ad	vance							*
Advanced Network												- 1
QoS			Mode Confi	guration								
DMZ			Enabled		Uplink Device		1	Downlink Devic	e			
Firewall			√		Cloud			UART_DEV		EDIT	DELET	
Port Forwards			ADD									
Static NAT												
Smartlink			Connection	Configuration								
M2M Platform			Enabled	Name	Working Mode	Target Addres	s Status	Conns	Protocol			
Network Monitor			V	Cloud	TCP Server	30001	Listening	0	Pass-Through	EDIT	DELET	
Link Control			V	UART_DEV	UART	COM1	Connected	1	Pass-Through	EDIT	DELETI	
Dynamic DNS										and the second		-
SNMP Service			ADD									
VPN Configuration												
System Managemen	nt >		Serial Confi	guration								
Logout			Interf	ace	Speed	Data Bit	Stop Bit	Parity	Flow Control			
			CON	11	115200	8	1	None	None		EDIT	
										SAVE & AP	PLY	RESET

System Status >	M Smartlink × Overview × Network Diagnostics ×	H Tab operation *
Basic Network		*
Advanced Network 🗸	General Collection Advance	- 1
QoS	Cloud	
DMZ	Enabled	
Firewall	Name Cloud	
Port Forwards	Working Mode MQTT Client	
Static NAT		
Smartlink	Server Address 10.10.11.13.1883	
M2M Platform	Protocol Pass-Through	
Network Monitor		
Link Control	Username złwi	
Dynamic DNS	Password ······	
SNMP Service	Subscribe Topic up/test	
VPN Configuration >	Report Topic down/test	
System Management >	0.00S 0 🗸	
Logout	Client ID 1120ZR21908270518	
	MQTT Keepalive Period	
	Enable Heartbeat	
	BACK TO OVERVIEW SAVE & APPLY	RESET

System Status >	 Smartlink ×	Overview x	Network Diagnostics #							₩	Tab operation *
Basic Network											
Advanced Network 🗸	General Co	ellection Advar	nce								
QoS	Mode Config	uration									
DMZ	Enabled		Uplink Device			C	ownlink Device				
Firewall	~		Cloud				UART_DEV		EDIT	DE	LETE
Port Forwards	ADD								-		_
Static NAT											
Smartlink											
M2M Platform	Connection	Configuration									
Network Monitor	Enabled	Name	Working Mode	Target	Address	Status	Conns	Protocol			_
Link Control	~	Cloud	MQTT Client	10.10.1	1.13:1883	Connected	1	Pass-Through	EDIT	DE	LETE
Dynamic DNS	~	UART_DEV	UART	C	DM1	Connected	1	Pass-Through	EDIT	DE	ELETE
SNMP Service	ADD										
VPN Configuration >	_										
System Management >	Serial Config	juration									
Logout	Inter	face	Speed	Data Bit	Stop Bit		Parity	Flow Control			
	CO	м1	9600	8	1		None	None		EDIT	
									SAVE 8	APPLY	RESET
									-		

6.2 to config 'UART\_DEV'/'Downlink Device' option: set it to tcp client mode(We simulate the IP address of the computer as the user network device running in TCP Server mode), select protol to PASS-Through.

System Status >	Smartlint X Overview X Network Diagnostics X	➡ Tab operation ▼
Basic Network →		
Advanced Network 🗸	General Collection Advance	
QoS	Mode Configuration	
DMZ	Enabled Uplink Device Downlink Device	
Firewall	✓ Cloud UART_DEV EDIT	DELETE
Port Forwards	ADD	
Static NAT		
Smartlink		
M2M Platform	Connection Configuration	
Network Monitor	Enabled Name Working Mode Target Address Status Conns Protocol	
Link Control	✓ Cloud MQTT Client 10.10.11.13:1883 Connected 1 Pass-Through EDI	DELETE
Dynamic DNS	✓ UART_DEV UART COM1 Connected 1 Pass-Through EDIT	DELETE
SNMP Service	ADD	
VPN Configuration →		
System Management >	Serial Configuration	
Logout	Interface Speed Data Bit Stop Bit Parity Flow Control	
	COM1 9600 8 1 None None	EDIT
	SAVE &	APPLY RESET
System Status >	Imatink x         Overview x         Network Diagnostics x	M Tab operation *
Basic Network →		
Advanced Network		
	General Collection Advance	
QoS	General Collection Advance	
QoS DMZ	General Collection Advance UART_DEV Enabled 🕑	
QoS DMZ Firewall	General Collection Advance UART_DEV Enabled  Name UART DEV	
QoS DMZ Firewall Port Forwards	General Collection Advance UART_DEV Enabled  UART_DEV Working Mode TCP Cleart	
OoS DMZ Firewall Port Forwards Static NAT	General Collection Advance UART_DEV Enabled  UART_DEV Working Mode TCP Client	
QoS DMZ Firewall Port Forwards Static NAT Smartlink	General Collection Advance UART_DEV Enabled UART_DEV UART_DEV Working Mode TCP Client Server Address 192.168.1.236.502	
QoS DMZ Firewall Port Forwards Static NAT Smartlink M2M Platform	General Collection Advance	
CoS DMZ Firewall Port Forwards Static NAT Smartlink M2M Platform Network Monitor	General Collection Advance	
CoS DMZ Firewall Port Forwards Static NAT Strattlink M2M Platform Network Monitor Link Control	General Collection Advance	
GoS DMZ Firewall Port Forwards Static NAT Static NAT Smartlink M2M Platform Network Monitor Link Control Dynamic DNS	General Collection Advance	
CoS DMZ Firewall Port Forwards Static NAT Static NAT M2M Platform Network Mentlor Link Control Dynamic DNS SNMP Service	General Collection Advance	APPLY RESET

## 6.3 All configuration finished as below (here we don't need Serial Configuration any more).

System Status →	📢 Smartlink 🛪 Ove	erview x Network Diagnostics 3	¢				➡ Tab operation ▼
Basic Network >							
Advanced Network ~	General Collecti	on Advance					
QoS	Mode Configurati	on					
DMZ	Enabled	Uplink Device		Downlink Device			
Firewall	4	Cloud		UART_DEV		EDIT	DELETE
Port Forwards	ADD						
Static NAT							
Smartlink							
M2M Platform	Connection Confi	guration					
Network Monitor	Enabled	Name Working Mode	Target Address	Status Conns	Protocol		
Link Control	√	Cloud MQTT Client	10.10.11.13:1883	Connected 1	Pass-Through	EDIT	DELETE
Dynamic DNS	-V 1	UART_DEV TCP Client	192.168.1.236:502	Disconnect 0	Pass-Through	EDIT	DELETE
SNMP Service	ADD						
VPN Configuration >	1.1						
System Management >	Serial Configurati	on					
Logout	Interface	Speed	Data Bit Stop Bi	Parity	Flow Control		
	СОМ1	9600	8 1	None	None		DIT
						SAVE & AF	PLY RESET

7. Firstly, to install and run the MQTTx client testing tool on the computer.

Then try to configure all MQTT portocol parameters refering to the following steps.

	and a start of the start of the			_	~
File Edit V	Connections New Collection	< Back	New	<sup>3</sup> Г	Connect
×				L	
		General			
-		* Name	mqtt_test	0	
	1	* Client ID	mqttx_a2303771	C	• •
+		* Host	mqtt:// v 10.10.11.13		
		* Port	1883	~	
	No Data	Username	zlwl		
		Password			
60		SSL/TLS	🔿 true 💽 false		
0		Advanced A			
ŝ		Connact Ti	monut (n) 40	<u>^</u>	
		Koor		~	
		Kee		$\sim$	
S MQTTX File Edit V	/iew Window Help				×
MQTTX File Edit V	View Window Help Connections New Collection	mqtt_test ≥	0	- ⊏ () ⊉ (	×
File Edit V	/iew Window Help Connections New Collection  mut_test@10.10.11.13	mqtt_test ♥ 6	o a= ● Plaintext ∨ A	- C	× + ····
File Edit V	View Window Help Connections New Collection mqtt_test@10.10.11.13	mqtt_test 6 + New Subscript	o ion dΞ ● Plaintext ∨ A	U L (	×  Published
S MQTTX File Edit V	View Window Help Connections New Collection mqtt_test@10.10.11.13 4	mqtt_test 6 (+ New Subscript	o ion d≡ ● Plaintext ∨ A	U L I	× + ···
WQTTX File Edit V	View Window Help Connections New Collection  mqtt_test@10.10.11.13  4	mqtt_test 6 + New Subscript	o Ion dia entry and a second	U 2 1	+ ···
WQTTX File Edit V	View Window Help Connections New Collection • mqtt_test@10.10.11.13 4	mqtt_test 6 + New Subscript	o Ion d I I I I I I I I I I I I I I I I I I I	U 2 1	× + ····
WAUTX File Edit V	/iew Window Help Connections New Collection • mqtt_test@10.10.11.13 4	mqtt_test 6 + New Subscript	o Ion ₫ Plaintext ∨ A	() L (	+ ···
S MQTTX File Edit V	/iew Window Help Connections New Collection • mqtt_test@10.10.11.13 4	mqtt_test 6 + New Subscript	Image: Image	U L I	+ ···
S MQTTX File Edit V S P P P P P P P P P P P P P P P P P P	/iew Window Help Connections New Collection • mqtt_test@10.10.11.13 4	mqtt_test ♥ 6 + New Subscript	Image: Image	U L I	× → ···· Published
S MQTTX File Edit V S C C C C C C C C C C C C C C C C C C	View Window Help Connections New Collection • mqtt_test@10.10.11.13 4	mqtt_test ♥ 6 + New Subscript	Image: The second s	- C	Y ···· Published
MQTTX File Edit V  File Edit V  File Control  Factor  Factor	<pre>/iew Window Help Connections New Collection     e mqtt_test@10.10.11.13     4</pre>	mqtt_test ♥ 6 + New Subscript	Image: The second s	- C	× Published
MQTTX File Edit V File Edit V Fil	<pre>/iew Window Help Connections New Collection     e mqtt_test@10.10.11.13 4</pre>	mqtt_test ≽ 6 + New Subscript	Image Plaintext ∨ A Payload: Plaintext ∨ QoS: 5 up/test abc	- C () 2 () NI Received 2 () R () () () () () () () () () () () () () (	× Published etain

S MQTTX File Edit Vi	ew Window Help						_		×
	Connections	New Collection	mqtt_test 🛛 🛛	)			02	+	
×	mqtt_test@10.10.1	1,13	<u></u>		Plaintext ~	All	Received	Publ	ished
		New Subsc	ription		×				
ዊ		* Topic <b>7</b>							
+		down/test							
		* QoS		Color					
		0	~	#BE1E7A	0				
B		Alias							
0					8	QoS: 2 🗸		Retain	
ŵ					Cancel Confirm			€e	
									1

8.Run the TCP/UDP network tool (to set TCP Server mode with port 502 for example) and MQTT client tool on the computer at the same time, then you can see that the data sending and receiving from each tool works well.



