Advantech AE Technical Share Document

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Category	■FAQ □SOP	Related OS	N/A
Abstract	What is the data that WISE module log-in the system log?		
Keyword	WISE, data format, system log, record, logsys_message		
Related Product	WISE-4010/LAN, WISE-4050/LAN, WISE-4060/LAN, WISE-4012, WISE-4012E, WISE-4050, WISE-4051, WISE-4060, WISE-4220-S231		

■ **Problem Description:**

This document shows that the data in system log.

■ **Brief Solution - Step by Step:**

Description	Retrieves the system log data in system memory.
URL Structure	**http://10.0.0.1/logsys_message**
HTTP Method	GET：According to the setting of filtering, server returns the all/partial of system logged data.

GET	Request：
	
	 GET /logsys_message
	
	 [Example]:
	 ● Request : **GET /logsys_message** for WISE-4060 module
	
	 Content-type: application/json
	 Response: 200 OK
	 {
	  "LogMsg": [
	    {
	      "PE":6,
	      "TIM":"2014-11-11T15:48:32+08:00",
	      "UID":"WISE-4060_00D0C9CC0001",
	      "MAC":"00-D0-C9-CC-00-01",
	      "Record" : "00000001"
	    },

```
        {
          "PE":8,
          "TIM":"2014-11-11T15:49:44+08:00",
          "UID":"WISE-4060_00D0C9CC0001",
          "MAC":"00-D0-C9-CC-00-01",
          "Record" : "0A090B04"
        },
        {
          "PE":1,
          "TIM":"2014-11-11T15:51:02+08:00",
          "UID":"WISE-4060_00D0C9CC0001",
          "MAC":"00-D0-C9-CC-00-01",
          "Record" : "C9CC00F5"
        }
      ]
    }
```

- JSON array name definition:

Field	Abbreviation	Data Type
Array of log messages	LogMsg	Array

- Resource value definitions :

Field	Abbreviation	Data Type	Property	Description
Periodic / Event	PE	Number	R	Recording mode of the storage (Reference system Logging Event Table)
Timestamp	TIM	String	R	Timestamp of the storage ✓ Coordinated Universal Time (UTC) **Ex. "1415757750"** corresponds to November 12, 2014, 2:02:30 am, Standard Time. (meanwhile, 2014, 10:02:30 am, Taipei Time.) ✓ Local Date/Time according GMT time zone (ISO 8601) **Ex. "1994-11-05T08:15:30-05:00"** corresponds to November 5, 1994, 8:15:30 am, US Eastern Standard Time.
UUID	UID	String	R	Universally Unique Identifier (UUID) Max. 32 characters

MAC ID	MAC	String	R	MAC address. (12+5) characters, ex, "00-D0-C9-F0-63-F7"

Recording message	Record	String	R	The data detail for event

Event	Description	Record	
1	Wireless connection	MAC(lsat 4 octets) Ex: 00-D0-C9-F0-63-F7 → C9F063F7	
2	Wireless disconnection	MAC(lsat 4 octets) Ex: 00-D0-C9-F0-63-F7 → C9F063F7	
3*	Communication WDT	Byte 3 (index)	Byte 0,1,2 (content)
		0x00: FSV	0
		0x01: Modbus	User IP
		0x02: WEB	User IP
4	Cloud file upload	Byte 3, 2 / Index / 0: I/O 1: System	Byte 1, 0 / Error code / Click here
5	Cloud data push	Byte 3, 2 / Index / 0: I/O 1: System	Byte 1, 0 / Error code / Click here
6*	SNTP fail	0: no error 1: DNS error 2: No socket 3: No reply 4: Socket fatal Other*: ntp time	
7	Power on/off	1: Power on 2: System restart 3: Power off 4: CoreTask WDT timeout	
8	Memory full/overwrite in log function	1: IO full 2: IO overwrite 3: System overwrite	
9	Remote access fail(Access control)	IP	
10	Login error	IP	
11	FW upgrade	Version Ex: A1.00 B01→0A100B01	
12*	RTC battery low		
13	Internal configuration table error	Bit order for internal configuration error	

Bit order for internal configuration error:

Bit	Error item
0	Device information
1	Wifi setting
2	Network setting
3	Access control setting
4	IO setting
5	Modbus 0X address
6	Modbus 4X address

			7	User account setting	
			8	Internal buffer	
			9	Analog calibration value	
			10	IO log setting	
			11	Cloud setting	
			12	File upload setting	
			13	Private server setting	
			14	System log setting	
			15	Internal buffer	
			16	File upload tag setting	
	14	Internal flash access error			
	15*	RF event	Most significant byte: 01*: WLAN disconnect event 02: Unexpected 03: Unexpected socket 04: Tx socket failed 05*: Disconnect(profile[0], priority, name len) + SSID[0] ~ SSID[3] 06*: Rssi level changes more than 1 slot, datactrl/mgt rsi | old level | new level 07*: histogram[0]~[5] for data ctrl rssi, shows 2 logs one time 08: Unexpected WLAN policy 09: IP acquired 0A: WLAN RF reset 0B: Connect to server fail (push) 0C: Connect to server fail (upload) 0D: Connect to server fail (MQTT) 0E: Internal error 0F: Internal abort error 10: Check ping error (Byte 2: 0 is error, 1 is no packet received) 11: Reserved 12*: Connection List Full(without webserver) 13: reboot interval timeout 14:Socket connect(byte 2: conn type, byte 0: socket id) 15:Socket disconnect(byte 2: conn type, byte 0: socket id)		
	16	P2P	1: Access control error 2: Password error 3: No QOS ACK		
	17*	Webserver_Utility	Byte 3 (index)	Byte 0,1,2 (content)	
			0x01: delete oldest login user	deleted User IP (last 3 bytes)	

					0x02: Login list is full	login User IP (last 3 bytes)	
					0x03~0xFF reserved		
		18	HW		Byte 3 (index)	Byte 0,1,2 (content)	
					I2C error	0	

Remarks	* ➔ See example in below.

For example: Receive SNTP server time data.

System log:

Event	Description	Record
6	SNTP fail	0: no error
		1: DNS error
		2: No socket
		3: No reply
		4: Socket fatal
		Other: ntp time

In the following figure, the E16 is the time that WISE received from a NTP server. Then it will be used to adjust the RTC of the WISE module. The next timestamp is after adjusted. The unit of the received time is second, which needs to be added with 1900/1/1 00:00:00.

	A	B	C	D	E	F	G
1	UID	TIM	PE	Record			
16	WISE-4050_00D0C9E34CF0	2021-06-11T13:12:25+08:00	6	e46d6f39	3832377145	2021/06/11 13:12:25	
17	WISE-4050_00D0C9E34CF0	2021-06-11T13:12:25+08:00	0	00000000			
389	WISE-4050_00D0C9E34CF0	2021-06-11T14:12:26+08:00	6	e46d7d4a	3832380746	2021/06/11 14:12:26	
390	WISE-4050_00D0C9E34CF0	2021-06-11T14:12:26+08:00	0	00000000			
582	WISE-4050_00...	2021-06-11T15:12:27+08:00	6	e46d8b5b	3832384347	2021/06/11 15:12:27	
583	WISE-4050_00...	2021-06-11T15:12:27+08:00	0	00000000			
587	WISE-4050_00D0C9E34CF0	2021-06-11T16:12:28+08:00	6	e46d996b	3832387947	2021/06/11 16:12:27	
588	WISE-4050_00D0C9E34CF0	2021-06-11T16:12:27+08:00	0	00000000			

before time sync

After time sync

Calculation:

E587 is the original record from WISE-4050.

F587 = HEX2DEC(E587) ➔ e46d996b (HEX) = 3832387947 (DEC)

G587 = TEXT(F587/86400 +2+ 8/24,"yyyy/mm/dd hh:mm:ss") ➔ +8/24 is for GMT +8:00

For example: # of LED

Event	Description	Record
15*	RF event	06*: Rssi level changes more than 1 slot, datactrl/mgt rsi | old level | new level
		07*: histogram[0]~[5] for data ctrl rssi, shows 2 logs one time

Usually Event 15, record: 06XXXXXX comes with record:07XXXXXX, but the module only received data about 07XXXXXX because of weak connection.

If you can see 06XXXXXX, which indicates the number of LED(s).

Related explanation FAQ: How to know the connection status throughout LED on WISE?

Related explanation FAQ: The relationship between the Wi-Fi RSSI and the number of LED(s)

The following table shows WISE only with 1 LED (06XXXX01)

15	WISE-4050_00D0C9F75B26	2017-09-24T05:49:12+08:00	064a0401
15	WISE-4050_00D0C9F75B26	2017-09-24T05:49:12+08:00	07140000
15	WISE-4050_00D0C9F75B26	2017-09-24T05:49:12+08:00	0700001f

Event 15, record: 07xxxxx is calculated histogram level when module is calculating RSSI, which happens after connect to AP successfully.

Event	Description	Record
15*	RF event	05*: Disconnect(profile[0], priority, name len) + SSID[0] ~ SSID[3]

Important information is event 15, record: 05xxxxxx (disconnect) that could help to understand when the module is disconnected with an AP. Record: 04xxxxxx usually come with record 05xxxxx which indicates the disconnect target object.

For example: SSID and MAC address of the disconnected target

Event	Description	Record
2	Wireless disconnection	MAC(lsat 4 octets) Ex: 00-D0-C9-F0-63-F7 → C9F063F7
15*	RF event	05*: Disconnect(profile[0], priority, name len) + SSID[0] ~ SSID[3]

The SSID of the AP in my office is named "TPLINK8".

The system log is shown as following figure.

PE 2, means wireless discounted. It records the MAC of the connected AP.

PE 15 record 05….., means disconnect action, the following record 54504c49 indicate the **first 4 characters of the SSID** of the AP.

Hexadecimal (54504c49) convert into ASCII (TPLI).

```
{
    "PE": 2,
    "UID": "WISE-4050",
    "TIM": "2018-03-07T09:30:18+08:00",
    "Record": "2736f630"        MAC addr of target AP
},
{
    "PE": 15,
    "UID": "WISE-4050",
    "TIM": "2018-03-07T09:30:18+08:00",
    "Record": "0100006d"        WLAN disconnect event
},
{
    "PE": 15,
    "UID": "WISE-4050",
    "TIM": "2018-03-07T09:30:18+08:00",
    "Record": "0500020a"        Disconnect
},
{
    "PE": 15,
    "UID": "WISE-4050",
    "TIM": "2018-03-07T09:30:18+08:00",
    "Record": "54504c49"        SSID of target AP
},
```

TP-LINK®

產品狀態
快速安裝精靈
WPS
網路設定
無線網路
DHCP伺服器
通訊埠導向（NAT）
安全性設定
未成年子女上網管理
網路使用權限規則管理
固定路由
頻寬管理
ARP綁定
DDNS設定
系統工具

產品狀態

韌體版本：	3.16.9 Build 141027 Rel.55078n
硬體版本：	WR940N v2/WR941ND v5 00000000

區域網路（LAN）

MAC位址：	E8-DE-27-36-F6-30
IP位址：	192.168.0.1
子網路遮罩：	255.255.255.0

無線網路（WLAN）

無線網路功能：	啟用
無線網路名稱（SSID）：	TPLINK8_AE
模式：	使用11bgn混合模式
頻道寬度：	自動
頻道：	7
MAC位址：	E8-DE-27-36-F6-30
WDS狀態：	不啟用

For example: Communication WDT

Event	Description	Record	
3	Communication WDT	Byte 3 (index)	Byte 0,1,2 (content)
		0x00: FSV	0
		0x01: Modbus	User IP
		0x02: WEB	User IP

The Communication WDT will be triggered if there is none of TCP connection in/out to/from the WISE module.

Related explanation FAQ: There are 4 different WDT in WISE series FW, what are they exactly?

1.   Communication WDT is not triggered due to scan WISE module every 1 second.

2.   Communication WDT is triggered and server receives data every 40 seconds.

3. Disconnect power AP with power and reconnect. WISE upload data which was logged with period every 5 seconds.
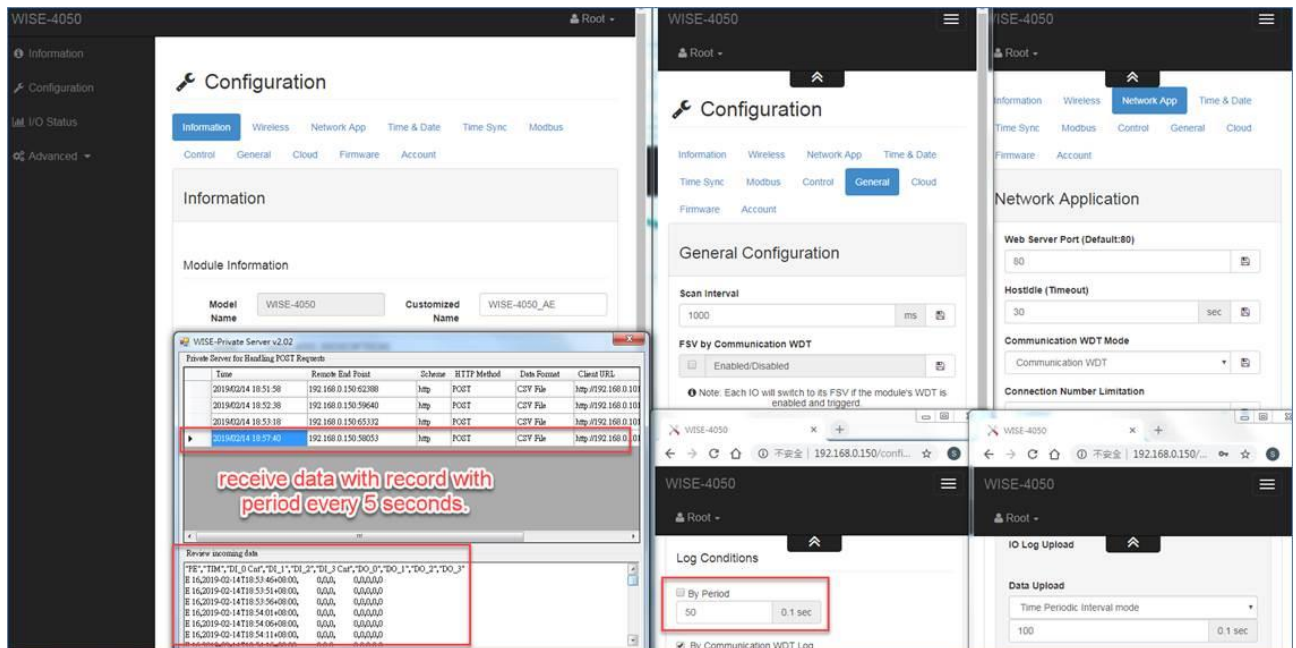
4. System log event "PE: 3, record: 00000000". The time that server receives data depends on the Internet environment condition.

For example: RCT battery low

Event	Description	Record
12	RTC battery low	

If a module **RTC (real-time clock) battery status is low**, it cannot reserve the internal clock of a module, there will be an event 12 in system log and the timestamp will become initial value "2000-01-01".

The firmware detects the battery status when the module is booted up and every 60 seconds after booted up. The system log will be recorded only 1 time after booted up.

For example: Connection # reaches the maximum limitation.

Event	Description	Record
15	RF event	12: Connection List Full(without webserver)

Iff: a user enabled "**Connection Number Limitation**" function, the 4th TCP connection will be kicked out by firmware, so there will be system log "PE:15, Record:12000000" recording the event "*Connection List Full*". The 4th TCP connection could be requested from a server to WISE, or the WISE to a cloud service.

Note: If the P2P function is not using default port number, it will occupy 1 connection if a user

enabled P2P function. The reason is the default port number (5048) is constantly listening to utility search. So, if P2P function is using default port number, there is no need to open an extract connection.
Note: The module will auto restart after a user enables the function, there will be "Event: 7, Record: 00000002" (powered-off) and "Event: 7, Record: 00000001" (powered-on).

The setting and the system log are shown as following figures.

For example: Log-in # reaches the maximum limitation.

Event	Description	Record	
17	Webserver_Utility	Byte 3 (index)	Byte 0,1,2 (content)
		0x01: delete oldest login user	deleted User IP
		0x02: Loginlist is full	login User IP

If a user opens more than 15 log-in webpage, the 1st log-in IP of the server will be deleted from the WISE internal buffer when 16th webpage opens log-in page.

| 15 | 2000-01-01T15:52:45+08:00 | WISE-4050_00D0C9F70C85 | 016500a8 |

If a user log-in the WISE module more than 15 times, the 16th server who wanted to log-in would be blocked out. There will be a system log and error code on the 16th server webpage.

| 15 | 2000-01-01T15:33:51+08:00 | WISE-4050_00D0C9F70C85 | 026500a8 |
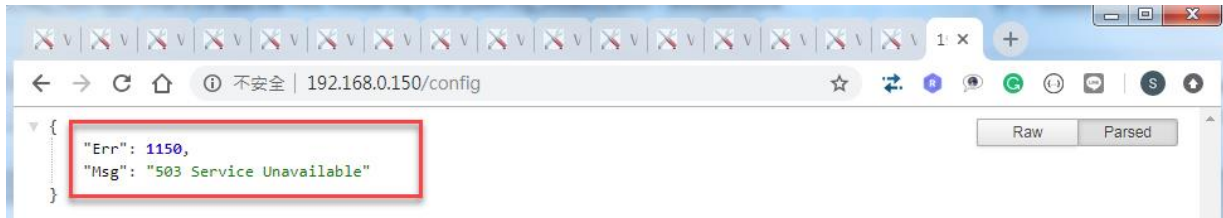
"6500a8" in record indicate the IP address (192.168.0.101) of the server which is blocked out or kicked out.

➔ 65 (HEX) = 101 (Dec)

➔ A8 (HEX) = 168 (Dec)

Event Type	Timestamp	UUID	Record
17	2000-01-01T15:52:45+08:00	WISE-4050_00D0C9F70C85	016500a8
17	2000-01-01T15:33:51+08:00	WISE-4050_00D0C9F70C85	026500a8