Advantech AE Technical Share Document

Date	2021/7/5	SR#	1-3419358562				
Category	■FAQ □SOP	Related OS	N/A				
Abstract	What is the data that WI	That is the data that WISE module log-in the system log?					
Keyword	WISE, data format, system log, record, logsys_message						
Related	WISE-4010/LAN, WISE-4050/LAN, WISE-4060/LAN, WISE-4012, WISE-						
Product	4012E, WISE-4050, WISE-4051, WISE-4060, WISE-4220-S231						

Problem Description:

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This document shows that the data in system log.

■ <u>Brief Solution - Step by Step</u>:

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 	v name definition:

JSON array name definition:

Field	Abbreviation Data Type	
Array of log messages	LogMsg Array	_

Resource value definitions : •

Field	Abbreviation	Data Type	Property	Description
Periodic /	PE	Number	R	Recording mode of the storage
Event				(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 ad	dress.	
				(12+5) c	haracters, ex, "00-D	0-C9-F0-63-F7"
Recording	Record	String	R	The data	detail for event	
massaga				Event	Description	Record
message				1	Wireless	MAC(lsat 4 octets)
					connection	Ex: 00-D0-C9-F0-63-F7 →
				2	Wireless	C9F063F7 MAC(lsat 4 octets)
				2	disconnection	Ex: 00-D0-C9-F0-63-F7 →
						C9F063F7
				3*	Communication	Byte 3 Byte 0,1,2
					WDT	(index) (content)
						0x00: FSV 0 0x01: User IP
						Modbus
						0x02: User IP
						WEB
				4	Cloud file upload	Byte 3, 2 Byte 1, 0
						IndexError code0: I/OClick here
						1: System
				5	Cloud data push	Byte 3, 2 Byte 1, 0
						Index Error code
						0: I/O <u>Click here</u>
				6*	SNTP fail	1: System
				0**	SINTP Tall	0: no error 1: DNS error
						2: No socket
						3: No reply
						4: Socket fatal
				7	Power on/off	Other*: ntp time 1: Power on
					i ower on/on	2: System restart
						3: Power off
						4: CoreTask WDT timeout
				8	Memory full/overwrite in	1: IO full 2: IO overwrite
-			-		log function	3: System overwrite
				9	Remote access	IP
					fail(Access	
				10	control)	ID
				<u>10</u> 11	Login error FW upgrade	IP Version
				11	r w upgrade	Ex: A1.00 B01→0A100B01
				12*	RTC battery low	
				13	Internal	Bit order for internal
					configuration	configuration error
					table error	BitError item0Device information
						1 Wifi setting
						2 Network setting
						3 Access control
						setting
				1		
						4IO setting5Modbus 0X address

7 User account settin	ng
8 Internal buffer	
9 Analog calibration	n
value	
10 IO log setting	
11 Cloud setting	
12 File upload setting	g
13 Private server settin	
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 eve	nt
02: Unexpected	
03: Unexpected socket	
04: Tx socket failed	
05*: Disconnect(profile[0],	
priority, name len) + SSID[0)]~
SSID[3]	-
06*: Rssi level changes mor	e
than 1 slot, datactrl/mgt rsi	
level new level	
07*: histogram[0]~[5] for da	
ctrl rssi, shows 2 logs one ti	
08: Unexpected WLAN poli	icy
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	
OF: 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: co	onn
type, byte 0: socket id)	
15:Socket disconnect(byte 2	:
conn type, byte 0: socket id)	
16P2P1: Access control error	
2: Password error	
3: No QOS ACK	
17*Webserver_UtilityByte 3Byte 0,1,2	
(index) (content)	
0x01: deleted	
delete User IP	
oldest (last 3	
login bytes)	
user	

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				0x02: Login list is full 0x03~0xF F reserved	login User IP (last 3 bytes)	
		18	HW	Byte 3 (index) I2C error	Byte 0,1,2 (content) 0	
Remarks	* \rightarrow See example in below.					

For example: Receive SNTP server time data.

System log:

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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	В	С	D	Е	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	3820200716	2021/06/11 14:12:26
390	WISE-4050_00D0C9E34CF0	2021-06-11T14:12:26+08:00	0	00000000		
582	WISE-4050_0 before time sync	2021-06-11T15:12:27+08:00	6	e46d8b5b	3832384347	2021/06/11 15:12:27
583	WISE-4050_0	2021-06-11T15:12:27+08:00	0	00000000		
587	WISE-4050_00D0C9E34CF0	2021-06-11T16:12:28+08:00	6	e46d996b	3832387047	2021/06/11 16:12:27
588	WISE-4050_00D0C9E34CE0	2021-06-11716:12:27+08:00	U	00000000		
	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		
		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 07XXXXX because of weak connection. If you can see 06XXXXXX, which indicates the number of LED(s).

Related explanation FAQ: <u>How to know the connection status throughout LED on WISE?</u> Related explanation FAQ: <u>The relationship between the Wi-Fi RSSI and the number of LED(s)</u> The following table shows WISE only with 1 LED (06XXXX01)

	8		
15	WISE-	2017-09-	064a04 <mark>01</mark>
	4050_00D0C9F75B26	24T05:49:12+08:00	
15	WISE-	2017-09-	07140000
	4050_00D0C9F75B26	24T05:49:12+08:00	
15	WISE-	2017-09-	0700001f
	4050_00D0C9F75B26	24T05:49:12+08:00	

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: 05xxxxx (disconnect) that could help to understand when the module is disconnected with an AP. Record: 04xxxxx 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	MAC(lsat 4 octets)
	disconnection	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
},
ł
    "PE": 15,
    "UID": "WISE-4050",
    "TIM": "2018-03-07T09:30:18+08:00",
    "Record": "0500020a" Disconnect
},
ł
    "PE": 15,
    "UID": "WISE-4050",
    "TIM": "2018-03-07T09:30:18+08:00",
    "Record": "54504c49"
                              SSID of target AP
},
```

TP-LINK

产品状態 (快速安装精- (快速安装精- 年 東路設定
 与線頻路
 DHCP同服器
 通訊均等向(
 安全性設定
 未成年子女上
 野路使用欄跟
 固定路由
 和宜管理
 ARP绑定
 DDN S設定
 东统工具

	\$360F5 ± *	3.16.9 Build 141027 Rel.55078n
	硬體版本:	WR940N v2/WR941ND v5 0000000
區域網路 (LAN))	
ET SHARE (E8-DE-27-36-F6-30
	IP位址:	192.168.0.1
	子網路這罩:	255.255.255.0
無線網路(WLAI	N }	
	無線網路功能:	股用
無	逸網路名稱(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状態:	不設用

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For example: Communication WDT

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

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.

WISE-4050			4	Root -	WISE-4050		WISE-4050	
Information					≜ Root +		& Root +	
	LIII IO S	tatus			*		_ ^	
lat I/O Status	DI DO		Scan I/O status according to		Configuration		Configuration	
o, Advanced -	St	atus	Configuration		Information Wireless Network App	Time & Date	Information Wireless Net	work App Time & Date
Access Control	Status				Time Sync Modbus Control Ger	cloud	Time Sync Modbus Cont	rol General Cloud
Data Logger	Channel	Mode	Status		Firmware Account		Firmware Account	
Diagnostician	0	Counter			General Configuration		Network Application	4
Peer to Peer	1	DI			Scan Interval		Web Server Port (Default:80)	
	2	DI	Ξ	- II	1000	ms 🖺	80	8
					FSV by Communication WDT		Hostidle (Timeout)	
	3	Counter	88888888888 (Seet) ? Reset		Enabled/Disabled	8	30	sec 🖺
	WISE-Private Si Private Server for Ho	undling POST Req		Tent URL	O Note: Each IO will switch to its FSV if the enabled and triggerd.	module's WDT is	× WISE-4050 × ← → C ① ◎ 不完全 1	
8							WISE-4050	=
		Sca	an WISE <30 seconds,				≜ Root +	
		V	VDT is not triggered.				Log Conditions	
							By Period 0.1 sec	
	Review incoming data	ia.	5				By Communication WDT Log	

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

WISE-4050	≜ Root +	WISE-4050	VISE-4050
Information		å Root -	& Root -
✗ Configuration	S Configuration	*	×
Lait I/O Status	Information Wireless: Network App Time & Date Time Sync: Modbus	& Configuration	Information Wireless Notwork App Time & Date Time Sync Modbus Control General Cloud
os Advanced -	Control General Cloud Firmware Account	Information Wireless Network App Time & Date	Firmware Account
	Information	Time Sync Modbus Control General Cloud	Network Application
	Module Information	General Configuration	Web Server Port (Default:80)
	Model WISE-4050 Customized VISE-4050_AE Name	Scan Interval 1000 ms 🖏	Hostidie (Timeout) 30 sec 😫
	WISE-Private Server v2.02	FSV by Communication WDT	Communication WDT Mode
	Private Server for Handling POST Requests Time Remote End Point Scheme HTTP Method Data Format Client URL	Enabled/Disable	Communication WDT •
	2019/02/4 18 51.58 192 168 0 159 6298 http: 2019/02/4 18 51.58 192 168 0 159 6298 http: 2019/02/4 18 52 38 192 168 0 159 59640 http: 2019/02/4 18 52 38 192 168 0 159 59640 http: 2019/02/4 18 52 38 192 168 0 159 59640 http: 2019/02/4 18 52 38 192 168 0 159 59640 http: 2019/02/4 18 51 58 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 6298 http: 2019/02/4 18 51 59 192 168 0 159 192 100 110 100 100 100 100 100 100 100 10	Note: Each IO will switch to its FSV if the module's WDT is enabled and triggerd.	Connection Number Limitation
	Automatic Tel:	x visse-4050 x +	× WISE-4050 × +
		← → C ① ① 不安全 192.168.0.150/confl ☆ ③	← → C ① ① 不安全 192.168.0.150/ ↔ ☆ ③
	receive a packet every 30+10 seconds.	WISE-4050	WISE-4050
		and the	📥 Root 🗸
	e m , , , , , , , , , , , , , , , , , ,	Log Conditions	IO Log Upload
	7F;'TIM','DI_0Cur','DI_1','DI_2','DI_3'Cur','DO_0','DO_1','DO_2','DO_3'' E 16,2019-03-147193306-08-00, 0,00, 0,00,00,00,00		Data Upload
	E 16,2019-02-14710 53-11+08:00, 0,0,0, 0,0,0,0,0	By Period 50 0.1 sec	Time Periodic Interval mode
		Rx Communication WDT Lon	100 0.1 sec

3. Disconnect power AP with power and reconnect. WISE upload data which was logged with period every 5 seconds.

0	🛔 Root 🔹	WISE-4050		/ISE-4050	
00		🛔 Root +		≜ Root •	
Configuration		*		*	La casa
Information Wireless Network App Time & Date	Time Sync Modbus	Configuration		Time Sync Modbus Control Genera	Time & Date
Control General Cloud Firmware Account		Information Wireless Network App Time &	& Date	Firmware Account	
Information		Time Sync Modbus Control General (Firmware Account	Cloud	Network Application	
		General Configuration		Web Server Port (Default:80)	5
Module Information				Market and the second	8
Model WISE-4050 Customized	WISE-4050_AE	Scan Interval		Hostidie (Timeout)	
Name Name		1000 m	ns 🖺	30	sec 🖺
WISE-Private Server v2.02		FSV by Communication WDT		Communication WDT Mode	
Private Server for Handling POST Requests Tune Remote End Point Scheme H	TTP Method Data Format Client URL	Enabled/Disabled		Communication WDT	• 🖻
2019/02/14 18 51 58 192 168 0 150 62/388 hmp PO 2019/02/14 18 52 38 192 168 0 150 59640 hmp PO	ST CSV File http://192.168.0.101	O Note: Each IO will switch to its FSV if the module's enabled and triggerd.		Connection Number Limitation	
2019/02/14 18:53-18 192.168.0.150.65332 http: PC 3019/02/14 18:57.40 192.168.0.150.58053 http: PC		X WISE-4050 × +	001	X WISE-4050 × +	0 6 1
		← → C 合 ① 不安全 192.168.0.150/confi	* 0	← → C ① ① 不安全 192.168.0.150/	- * * 0
receive data with record v		WISE-4050			
period every 5 seconds	5	≜ Root -		🛔 Root +	
K N.		*		IO Log Upload	
Prevent incoming data "PE", "TIM", "DL_0 Car", "DL_1", "DL_2", "DL_3 Car", "D0_0", "D0_1", "D0_2", "D0_3" B 16,2019,002,14118,33,464,000, 0,000, 0,000,00	-	Log Conditions			
E 16,2019-02-14T1853-51+08:00, 0,0,0, 0,0,0,0,0 E 16,2019-02-14T1853-56+08:00, 0,0,0, 0,0,0,0,0		By Period		Data Upload	
E 16,2019-02-14T18-54.01+08:00, 0,0,0, 0,0,0,0,0 E 16,2019-02-14T18-54.06+08:00, 0,0,0, 0,0,0,0,0		50 0.1 sec		Time Periodic Interval mode	0.1 mm
E 16,2019-02-14T18 54:11+08:00, 0,0,0, 0,0,0,0	3	By Communication WDT Log		100	0.1 sec

4. System log event "PE: 3, record: 00000000". The time that server receives data depends on the Internet environment condition.

3	2019-02-14T18:53:45+08:00	WISE-Private Server v2.02	0000000
3	2019-02-14T18:53:05+08:00	Private Server for Handling POST Requests Time Remote End Point Scheme HTTP Method Data Format Client URL	00000000
3	2019-02-14T18:52:25+08:00	▶ 2019/02/14 18:51:58 192.168.0.150.62388 http POST CSV File http://192.168.0	00000000
3	2019-02-14T18:51:44+08:00	2019/02/14 18:52:38 192.168.0.150:59640 http POST CSV File http://192.168.0 2019/02/14 18:53:18 192.168.0.150.65332 http POST CSV File http://192.168.0	00000000

For ever	nnle R	CT ha	ttery low
I UI CAAL	npic. r		

ror example. Re r ballery 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.

12	2000-01-01T12:00:00+08:00	WISE-4050_00D0C9F70C85	00000000

For example: Connection # reaches the maximum limitation.

Even	t 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.

	e C	Configuration						
	Informa Genera		ork App Account	Time & Date	Time Sync	Modbus	Contro	bl
	Netv	vork Application						
		Web Server Port (Default:80)	80					
		HostIdle (Timeout)	720			sec		
		Communication WDT Mode	Disabled			٣	B	
		Connection Number Limitation	Enabled			Ŧ	8	
		Peer to Peer Port (Default:5048)	5048				8	
vent Type	Time	estamp		UUID				Record
5	201	9-01-17T03:27:04+	+08:00	WISE-40	012_00D0	C9FAC80)4	12000000
5	2019-01-17T03:27:01+08:00		WISE-4012_00D0C9FAC804)4	12000000		
5	201	9-01-17T03:26:38+	-08:00	WISE-40	12 0000	C9EAC80	14	061b0004

WISE-4012_00D0C9FAC804

WISE-4012_00D0C9FAC804

WISE-4012_00D0C9FAC804

WISE-4012_00D0C9FAC804

WISE-4012_00D0C9FAC804

07500000

07000000

2736f630

09a80070

00000001

г 1	T • 11	1 /1	•	1
For example:	Log-in $\#$ re	eaches the	maximum	limitation.

E

15

15

1

15

7

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		

2019-01-17T03:26:38+08:00

2019-01-17T03:26:38+08:00

2019-01-17T03:26:35+08:00

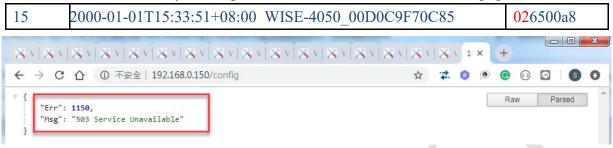
2019-01-17T03:26:35+08:00

2019-01-17T03:26:27+08:00

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.



"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