

REDSKAN Event Code (R.E.C.) specifications

Nov. 2, 2018 OPTeX Co. Ltd., Ver 1.0.1

Scope: REDSCAN mini series (RLS-2020I, RLS-2020S)

REDSKAN series (RLS-3060, RLS-3060L, RLS-3060SH)

1. Purpose of REDSCAN Event Code

When some object or error is detected, REDSCAN sends Event Code (R.E.C.) to VMS (Video Management Software). If the VMS supports generic events and the R.E.C. meets preset strings of the generic events, the VMS triggers preset action, PTZ control of cameras for example.

2. Data Structure of R.E.C.

R.E.C. is 26 bytes ASCII code and a null byte. It includes fixed sized 11 sections. Each section is stored in fixed position. When the section has nothing to do with current alarm, space (0x20) is stored.

Example:

R.E.C. when an object is detected in A1 area and master alarm is issued:

RLS126MOA1 _____

R.E.C. when preset time (default: 10 seconds) past after the object disappeared:

RLS126CL _____

Table of R.E.C. Sections

Section	Size (byte)	Codes	Descriptions
ID Number	6	RLS126	"RLS" and 3 bytes ID number of the REDSCAN. The ID number can be changed. Default 3 digits are representing the last group of the host IP address.
Master Alarm	2	MO CL	"MO" is master alarm which means some object is detected. "MO" is sent again if detected area is different from previous detected area. "CL" means that preset time (default: 10 seconds) past after master alarm was cleared.
The Latest Area	2	A1/A2/B1/B2 Or A11/A12/A21/A22/ B11/B12/B21/B22	The latest area where the object is detected. Possible Code of RLS-2020 series: A1/A2/B1/B2 Possible Code of RLS-3060 series: A1/A2/B1/B2 or A11/A12/A21/A22/B11/B12/B21/B22
Combination of Areas	2	AA/BB/BA/Ba/bA/ba/ EA/Ea/Eb/EB/AL	The code shows multiple areas where objects are detected. See the table below. (*1)

Multiple Areas	2	CC	"CC" means that objects are detected in multiple areas.
Disqualification	2	DQ dq	"DQ" means disqualification status. "dq" means that disqualification status is cleared.
Anti-rotation	2	AR ar	"AR" means that the unit is rotated. "ar" means that the rotation is recovered.
Anti-masking	2	AM am	"AM" means that the unit is masked. "am" means that the mask is recovered.
Internal Error	2	TR tr	"TR" means that internal error occurred. "tr" means that the error is recovered.
Soiling	2	SO so	"SO" means that laser window has dirt. "so" means that the dirt is removed.
Tamper or Device Monitoring	2	TA ta DM	"TA" means that the cover is opened, or the unit is removed from the wall. "ta" means that the trouble is recovered. If device monitoring is enabled, "DM" is stored in this section and sent repeatedly. "DM" is supported by RLS-2020 and RLS-3060 ver. 7.3.0 or later. (*2)

(*1) Possible Code of Multiple Areas:

RLS-3060 series and RLS-2020 series

Code	B2	B1	A1	A2
AA			detected	detected
BB	detected	detected		
BA	detected			detected
Ba	detected		detected	
bA		detected		detected
ba		detected	detected	

"a" means A1. "A" means A2. "b" means B1. "B" means B2.

RLS-2020 series Only

Code	B2	B1	A1	A2
EA	detected	detected	detected	
Ea	detected	detected		detected
Eb	detected		detected	detected
EB		detected	detected	detected
AL	detected	detected	detected	detected

"E" means "except".

Transmission interval for trouble event codes

"DQ", "AR", "AM", "TR", "SO", "TA" and "DM" are sent repeatedly during the trouble. The interval of sending them can be changed by "Transmission interval for Trouble code" in Fig.1.

(*2) Conditions of transmission for Device Monitoring code (DM)

"DM" code can be transmitted under the following conditions:

1. When in a state in which neither detected Object detection (alarm code, e.g. "MO" "A1"), Disqualification "DQ", Anti-rotation "AR", Anti-masking "AM", Internal Error "TR", Soiling "SO", Tamper "TA"
2. When in a state in detected Object detection and not detected Tamper. In this case, DM code is transmitted with Object detection (alarm codes, e.g. "MO" "A1"). Alarm code is transmitted immediately when the object is detected.

3. Protocol

Both of TCP and UDP are available simultaneously.

(1) TCP, UDP or TCP UDP and TCP

Destination IP address and port number can be changed.

The screenshot shows the 'I/O Settings' window with the 'REDWALL Event Code' tab selected. The 'Terminal' sub-tab is active. The settings are organized into several sections:

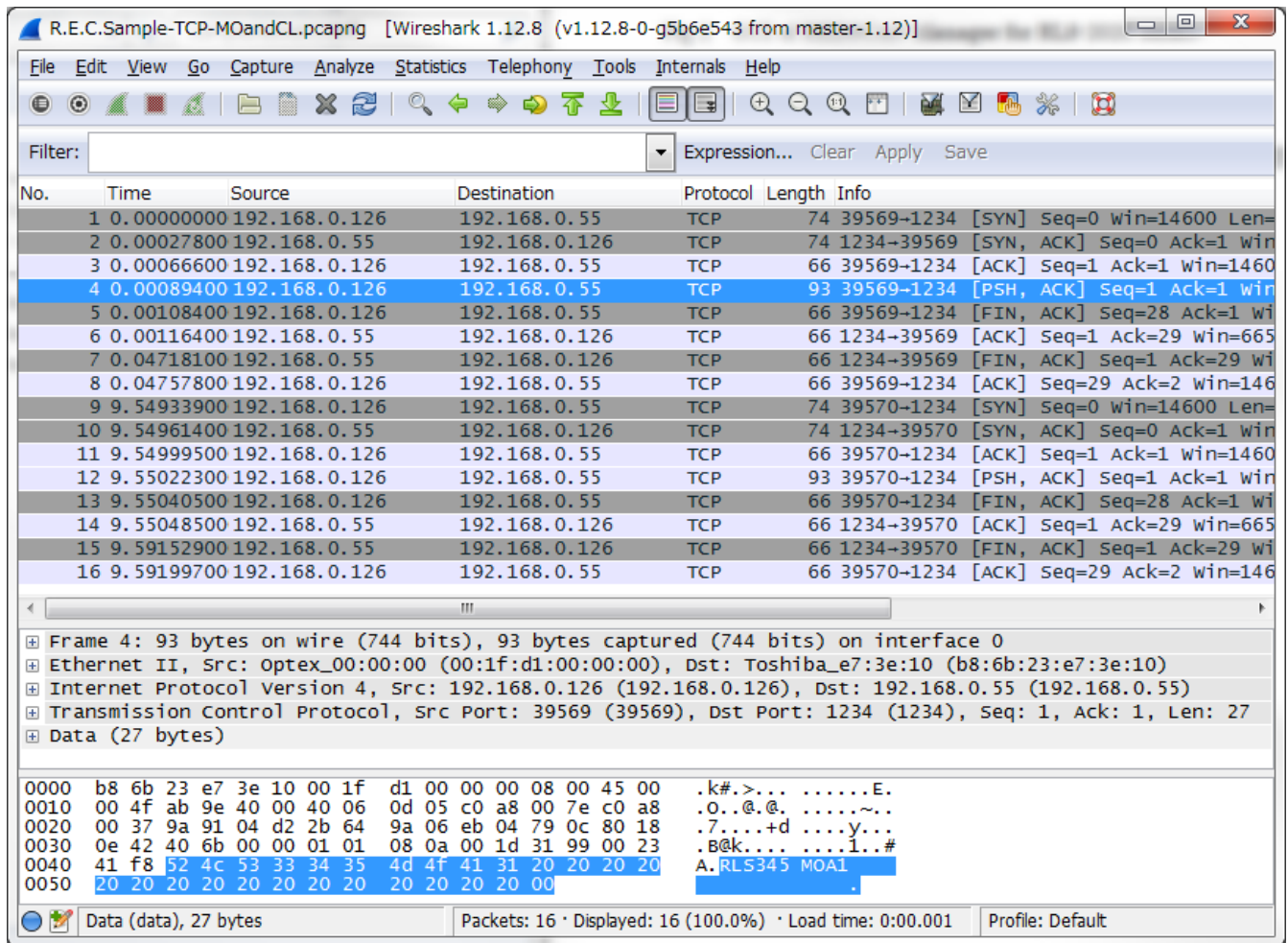
- Protocol:** Three radio buttons are present: 'UDP' (unselected), 'TCP' (selected), and 'UDP and TCP' (unselected).
- Detector ID:** A checkbox labeled 'Use and arbitrary number' is checked. Next to it is a numeric input field set to '0' with a range of '(0-999)'.
- Transmission Interval of Trouble Code:** A numeric input field is set to '1' with a range of '(1-3600 sec)'.
- Clear Code Timing:** A numeric input field is set to '10' with a range of '(2-60 sec)'.
- Heartbeat for Device Monitoring:** A checkbox labeled 'Heartbeat for Device Monitoring' is unchecked.
- UDP:** This section contains:
 - 'Scope': Two radio buttons, 'Broadcast' (selected) and 'Unicast' (unselected).
 - 'IP Address (Destination)': A text field containing '192.168.0.1'.
 - 'Port Number (Destination)': A numeric input field set to '1234' with a range of '(0-65535)'.
 - 'Number of Transmission': A numeric input field set to '10' with a range of '(1-20)'.
- TCP:** This section contains:
 - 'IP Address (Destination)': A text field containing '192.168.0.1'.
 - 'Port Number (Destination)': A numeric input field set to '1234' with a range of '(0-65535)'.

At the bottom right of the window are 'Save' and 'Cancel' buttons.

Fig.1 GUI of REDSCAN Manager Advanced

4. Sequence

(1) TCP



The image shows a Wireshark capture of a TCP sequence. The main pane displays a list of 16 packets. The first three packets (1-3) show the initial connection establishment (SYN, SYN-ACK, ACK). Packet 4 is the first data packet (PSH, ACK). Packets 5-8 show the connection being closed (FIN, ACK, ACK, FIN). Packets 9-16 show a second connection establishment and data transfer.

No.	Time	Source	Destination	Protocol	Length	Info
1	0.00000000	192.168.0.126	192.168.0.55	TCP	74	39569-1234 [SYN] Seq=0 win=14600 Len=
2	0.00027800	192.168.0.55	192.168.0.126	TCP	74	1234-39569 [SYN, ACK] Seq=0 Ack=1 win=
3	0.00066600	192.168.0.126	192.168.0.55	TCP	66	39569-1234 [ACK] Seq=1 Ack=1 win=1460
4	0.00089400	192.168.0.126	192.168.0.55	TCP	93	39569-1234 [PSH, ACK] Seq=1 Ack=1 win=
5	0.00108400	192.168.0.126	192.168.0.55	TCP	66	39569-1234 [FIN, ACK] Seq=28 Ack=1 wi
6	0.00116400	192.168.0.55	192.168.0.126	TCP	66	1234-39569 [ACK] Seq=1 Ack=29 win=665
7	0.04718100	192.168.0.55	192.168.0.126	TCP	66	1234-39569 [FIN, ACK] Seq=1 Ack=29 wi
8	0.04757800	192.168.0.126	192.168.0.55	TCP	66	39569-1234 [ACK] Seq=29 Ack=2 win=146
9	9.54933900	192.168.0.126	192.168.0.55	TCP	74	39570-1234 [SYN] Seq=0 win=14600 Len=
10	9.54961400	192.168.0.55	192.168.0.126	TCP	74	1234-39570 [SYN, ACK] Seq=0 Ack=1 win=
11	9.54995500	192.168.0.126	192.168.0.55	TCP	66	39570-1234 [ACK] Seq=1 Ack=1 win=1460
12	9.55022300	192.168.0.126	192.168.0.55	TCP	93	39570-1234 [PSH, ACK] Seq=1 Ack=1 win=
13	9.55040500	192.168.0.126	192.168.0.55	TCP	66	39570-1234 [FIN, ACK] Seq=28 Ack=1 wi
14	9.55048500	192.168.0.55	192.168.0.126	TCP	66	1234-39570 [ACK] Seq=1 Ack=29 win=665
15	9.59152900	192.168.0.55	192.168.0.126	TCP	66	1234-39570 [FIN, ACK] Seq=1 Ack=29 wi
16	9.59199700	192.168.0.126	192.168.0.55	TCP	66	39570-1234 [ACK] Seq=29 Ack=2 win=146

Frame 4: 93 bytes on wire (744 bits), 93 bytes captured (744 bits) on interface 0
Ethernet II, Src: Optex_00:00:00 (00:1f:d1:00:00:00), Dst: Toshiba_e7:3e:10 (b8:6b:23:e7:3e:10)
Internet Protocol Version 4, Src: 192.168.0.126 (192.168.0.126), Dst: 192.168.0.55 (192.168.0.55)
Transmission Control Protocol, Src Port: 39569 (39569), Dst Port: 1234 (1234), Seq: 1, Ack: 1, Len: 27
Data (27 bytes)

0000 b8 6b 23 e7 3e 10 00 1f d1 00 00 00 08 00 45 00 .k#.>... ..E.
0010 00 4f ab 9e 40 00 40 06 0d 05 c0 a8 00 7e c0 a8 .O..@.@.~..
0020 00 37 9a 91 04 d2 2b 64 9a 06 eb 04 79 0c 80 18 .7....+dy..
0030 0e 42 40 6b 00 00 01 01 08 0a 00 1d 31 99 00 23 .B@k.... ..1..#
0040 41 f8 52 4c 53 33 34 35 4d 4f 41 31 20 20 20 20 A.RLS345 MOA1
0050 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 .

Fig.3 Sample of TCP Sequence (R.E.C.Sample-TCP-MOandCL.pcapng)

When some alarm detected, REDSCAN connects to the destination (No.1-3), sends R.E.C. (No.4), and disconnects the TCP (No.5-8).

R.E.C.Sample-TCP-MOandCL.pcapng [Wireshark 1.12.8 (v1.12.8-0-g5b6e543 from master-1.12)]

File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help

Filter: Expression... Clear Apply Save

No.	Time	Source	Destination	Protocol	Length	Info
1	0.00000000	192.168.0.126	192.168.0.55	TCP	74	39569-1234 [SYN] Seq=0 win=14600 Len=
2	0.00027800	192.168.0.55	192.168.0.126	TCP	74	1234-39569 [SYN, ACK] Seq=0 Ack=1 win=
3	0.00066600	192.168.0.126	192.168.0.55	TCP	66	39569-1234 [ACK] Seq=1 Ack=1 win=1460
4	0.00089400	192.168.0.126	192.168.0.55	TCP	93	39569-1234 [PSH, ACK] Seq=1 Ack=1 win=
5	0.00108400	192.168.0.126	192.168.0.55	TCP	66	39569-1234 [FIN, ACK] Seq=28 Ack=1 wi
6	0.00116400	192.168.0.55	192.168.0.126	TCP	66	1234-39569 [ACK] Seq=1 Ack=29 win=665
7	0.04718100	192.168.0.55	192.168.0.126	TCP	66	1234-39569 [FIN, ACK] Seq=1 Ack=29 wi
8	0.04757800	192.168.0.126	192.168.0.55	TCP	66	39569-1234 [ACK] Seq=29 Ack=2 win=146
9	9.54933900	192.168.0.126	192.168.0.55	TCP	74	39570-1234 [SYN] Seq=0 win=14600 Len=
10	9.54961400	192.168.0.55	192.168.0.126	TCP	74	1234-39570 [SYN, ACK] Seq=0 Ack=1 win=
11	9.54999500	192.168.0.126	192.168.0.55	TCP	66	39570-1234 [ACK] Seq=1 Ack=1 win=1460
12	9.55022300	192.168.0.126	192.168.0.55	TCP	93	39570-1234 [PSH, ACK] Seq=1 Ack=1 win=
13	9.55040500	192.168.0.126	192.168.0.55	TCP	66	39570-1234 [FIN, ACK] Seq=28 Ack=1 wi
14	9.55048500	192.168.0.55	192.168.0.126	TCP	66	1234-39570 [ACK] Seq=1 Ack=29 win=665
15	9.59152900	192.168.0.55	192.168.0.126	TCP	66	1234-39570 [FIN, ACK] Seq=1 Ack=29 wi
16	9.59199700	192.168.0.126	192.168.0.55	TCP	66	39570-1234 [ACK] Seq=29 Ack=2 win=146

Frame 12: 93 bytes on wire (744 bits), 93 bytes captured (744 bits) on interface 0

Ethernet II, Src: Optex_00:00:00 (00:1f:d1:00:00:00), Dst: Toshiba_e7:3e:10 (b8:6b:23:e7:3e:10)

Internet Protocol Version 4, Src: 192.168.0.126 (192.168.0.126), Dst: 192.168.0.55 (192.168.0.55)

Transmission Control Protocol, Src Port: 39570 (39570), Dst Port: 1234 (1234), Seq: 1, Ack: 1, Len: 27

Data (27 bytes)

```

0000 b8 6b 23 e7 3e 10 00 1f d1 00 00 00 08 00 45 00 .k#.>... ..E.
0010 00 4f 7b cc 40 00 40 06 3c d7 c0 a8 00 7e c0 a8 .O{.@.@. <.....~..
0020 00 37 9a 92 04 d2 45 8b 4e 9f bd ea c1 87 80 18 .7....E. N.....
0030 0e 42 79 e7 00 00 01 01 08 0a 00 1d 35 54 00 23 .By..... ..5T.#
0040 45 b3 52 4c 53 33 34 35 43 4c 20 20 20 20 20 20 E.RLS345 CL
0050 20 20 20 20 20 20 20 20 20 20 20 20 00

```

Data (data), 27 bytes Packets: 16 · Displayed: 16 (100.0%) · Load time: 0:00.001 Profile: Default

Fig.4 Sample of TCP Sequence (continue)

When the alarm is cleared, REDSCAN waits for "Transmission Interval for Clear code" (Fig.1), connects to the destination (No.9-11), sends R.E.C. (No.12), and disconnects the TCP (No.13-16).

R.E.C.Sample-UDP-MOandCL.pcapng [Wireshark 1.12.8 (v1.12.8-0-g5b6e543 from master-1.12)]

File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help

Filter: Expression... Clear Apply Save

No.	Time	Source	Destination	Protocol	Length	Info
1	0.00000000	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
2	0.00007500	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
3	0.00010500	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
4	0.00012700	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
5	0.00017100	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
6	0.00019400	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
7	0.00023200	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
8	0.00025300	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
9	0.00029000	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
10	0.00031100	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
11	0.00035100	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
12	0.00037300	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
13	0.00040900	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
14	0.00043300	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
15	0.00046700	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
16	0.00048800	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
17	0.00052900	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
18	0.00054900	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
19	0.00058600	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
20	0.00060700	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
21	0.00064400	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
22	0.00066500	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
23	0.00070600	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
24	0.00072700	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
25	0.00076300	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
26	0.00078400	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
27	0.00082300	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
28	0.00084400	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
29	0.00088200	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
30	0.00090500	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
31	10.2832420	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234

Frame 2: 69 bytes on wire (552 bits), 69 bytes captured (552 bits) on interface 0

Ethernet II, Src: optex_00:00:00 (00:1f:d1:00:00:00), Dst: Toshiba_e7:3e:10 (b8:6b:23:e7:3e:10)

Internet Protocol Version 4, Src: 192.168.0.126 (192.168.0.126), Dst: 192.168.0.55 (192.168.0.55)

User Datagram Protocol, Src Port: 57238 (57238), Dst Port: 1234 (1234)

Data (27 bytes)

```

0000 b8 6b 23 e7 3e 10 00 1f d1 00 00 00 08 00 45 00 .k#.>... ..E.
0010 00 37 00 00 40 00 40 11 b8 b0 c0 a8 00 7e c0 a8 .7..@.@. ....~.
0020 00 37 df 96 04 d2 00 23 30 03 52 4c 53 33 34 35 .7.....# 0.RLS345
0030 4d 4f 41 31 20 20 20 20 20 20 20 20 20 20 20 20 MOA1
0040 20 20 20 20 00

```

Data (data), 27 bytes Packets: 60 · Displayed: 60 (100.0%) · Load time: 0:00.002 Profile: Default

Fig.5 Sample of UDP Sequence (R.E.C.Sample-UDP-MOandCL.pcapng)

When some alarm detected, REDSCAN sends a series of 3 UDP packets to the destination (No.1-3). Second packet contains R.E.C. (No.2). According to "Number of Transmission" (Fig.2), REDSCAN repeats sending the series of 3 packets. (No.1 - No.30)

No.	Time	Source	Destination	Protocol	Length	Info
30	0.00090500	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
31	10.2832420	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
32	10.2834050	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
33	10.2835200	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
34	10.2835710	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
35	10.2836130	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
36	10.2836460	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
37	10.2836760	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
38	10.2837080	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
39	10.2837390	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
40	10.2837720	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
41	10.2838030	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
42	10.2838390	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
43	10.2840330	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
44	10.2841200	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
45	10.2841570	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
46	10.2841890	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
47	10.2842210	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
48	10.2842530	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
49	10.2842840	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
50	10.2843150	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
51	10.2843520	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
52	10.2844080	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
53	10.2844440	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
54	10.2844760	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
55	10.2845060	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
56	10.2845370	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
57	10.2845680	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
58	10.2846050	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234
59	10.2847880	192.168.0.126	192.168.0.55	UDP	69	Source port: 57238 Destination port: 1234
60	10.2848760	192.168.0.126	192.168.0.55	UDP	60	Source port: 57238 Destination port: 1234

Frame 32: 69 bytes on wire (552 bits), 69 bytes captured (552 bits) on interface 0		
Ethernet II, Src: optex_00:00:00 (00:1f:d1:00:00:00), Dst: Toshiba_e7:3e:10 (b8:6b:23:e7:3e:10)		
Internet Protocol Version 4, Src: 192.168.0.126 (192.168.0.126), Dst: 192.168.0.55 (192.168.0.55)		
User Datagram Protocol, Src Port: 57238 (57238), Dst Port: 1234 (1234)		
Data (27 bytes)		

0000	b8 6b 23 e7 3e 10 00 1f d1 00 00 00 08 00 45 00	.k#.>... ..E.
0010	00 37 00 00 40 00 40 11 b8 b0 c0 a8 00 7e c0 a8	.7..@.@.~..
0020	00 37 df 96 04 d2 00 23 5b 17 52 4c 53 33 34 35	.7.....# [..RLS345
0030	43 4c 20 20 20 20 20 20 20 20 20 20 20 20 20 20	CL
0040	20 20 20 20 00	.

Fig.6 Sample of UDP Sequence (continue)

When the alarm is cleared, REDSCAN waits for "Transmission Interval for Clear code" (Fig.2). Then, REDSCAN sends a series of 3 UDP packets to the destination (No.31-33). Second packet contains R.E.C. (No.32). According to "Number of Transmission" (Fig.2), REDSCAN repeats sending the series of 3 packets. (No.31-No.60)

5. Packet Structure

(1) When R.E.C. is sent via TCP:

27 bytes R.E.C. code is stored in TCP payload.

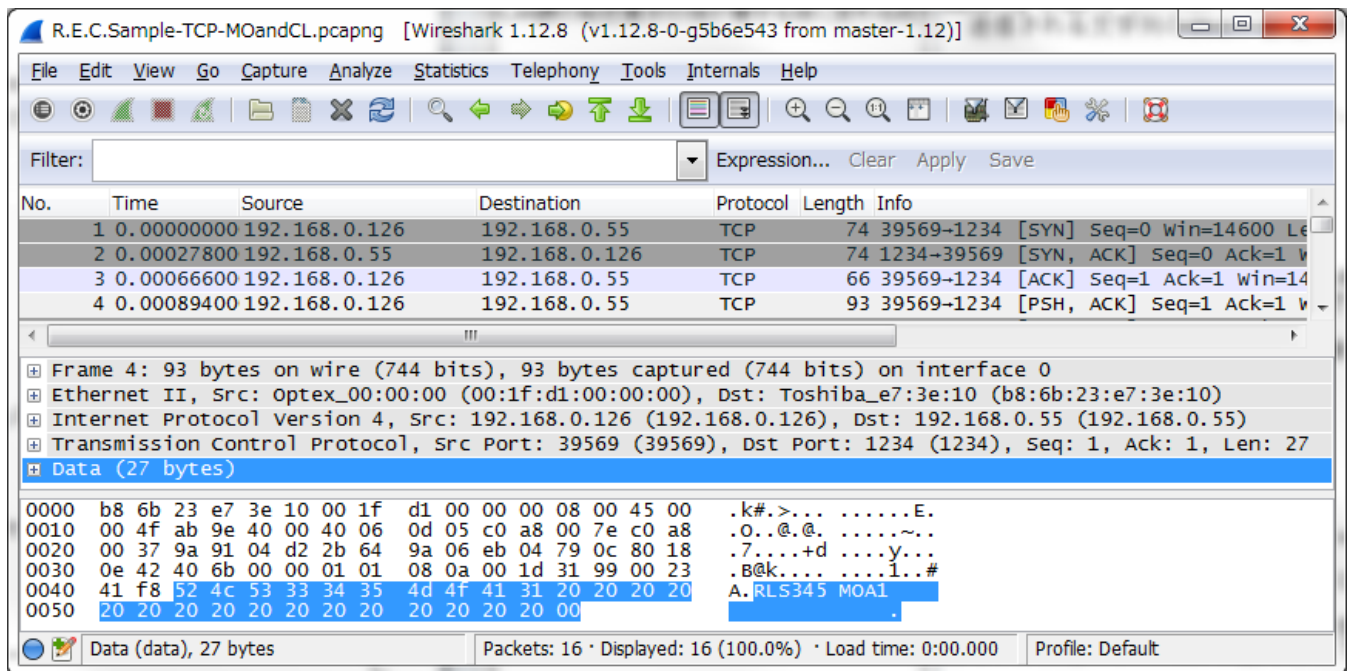


Fig.7 R.E.C. in TCP Payload

(2) When R.E.C. is sent via UDP:

REDSCAN sends a series of 3 UDP packets to the destination. The first packet contains 8 bytes header which starts from "URG.GC". The second packet contains R.E.C. The third packet contains 2 bytes checksum.

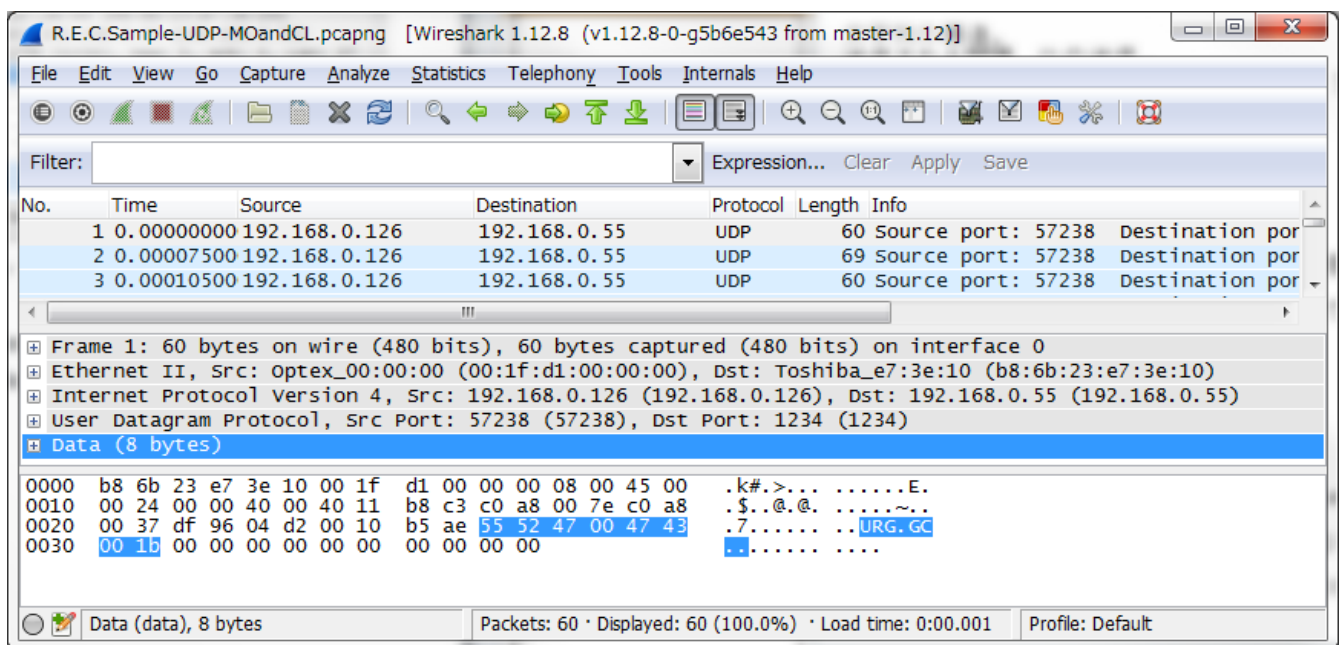


Fig.8 Header in the first UDP Packet

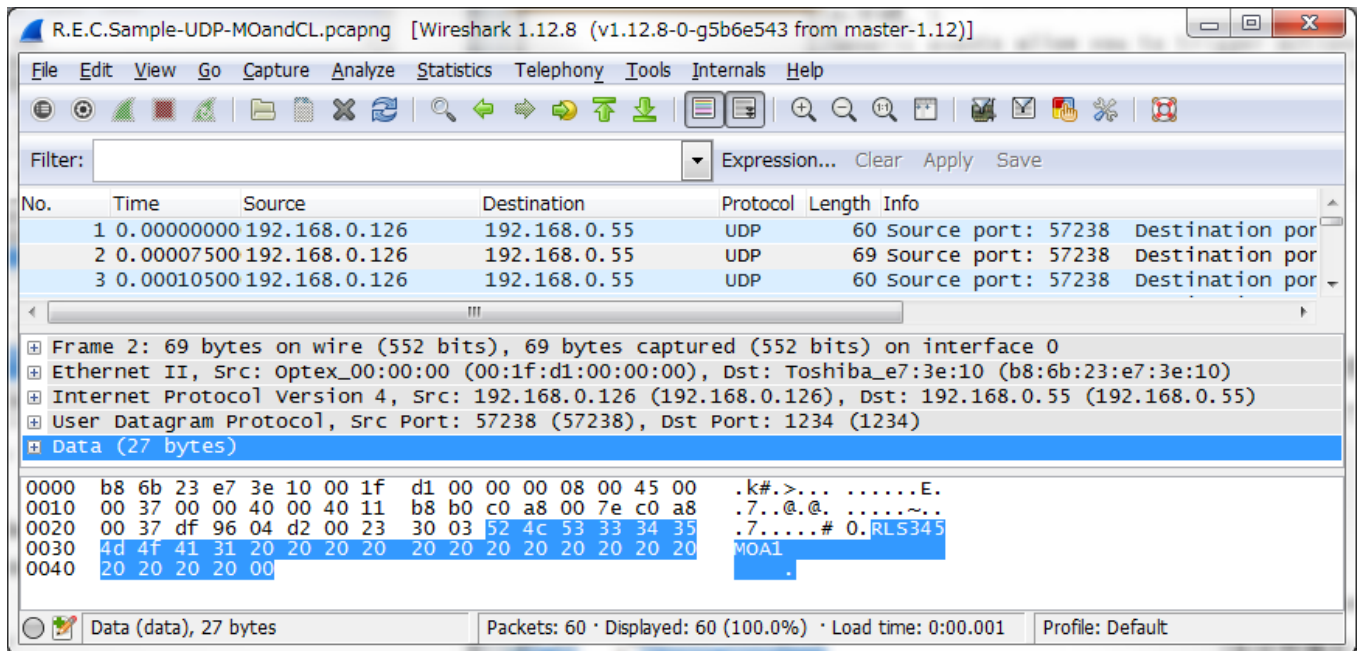


Fig9 R.E.C. in the second UDP Packet

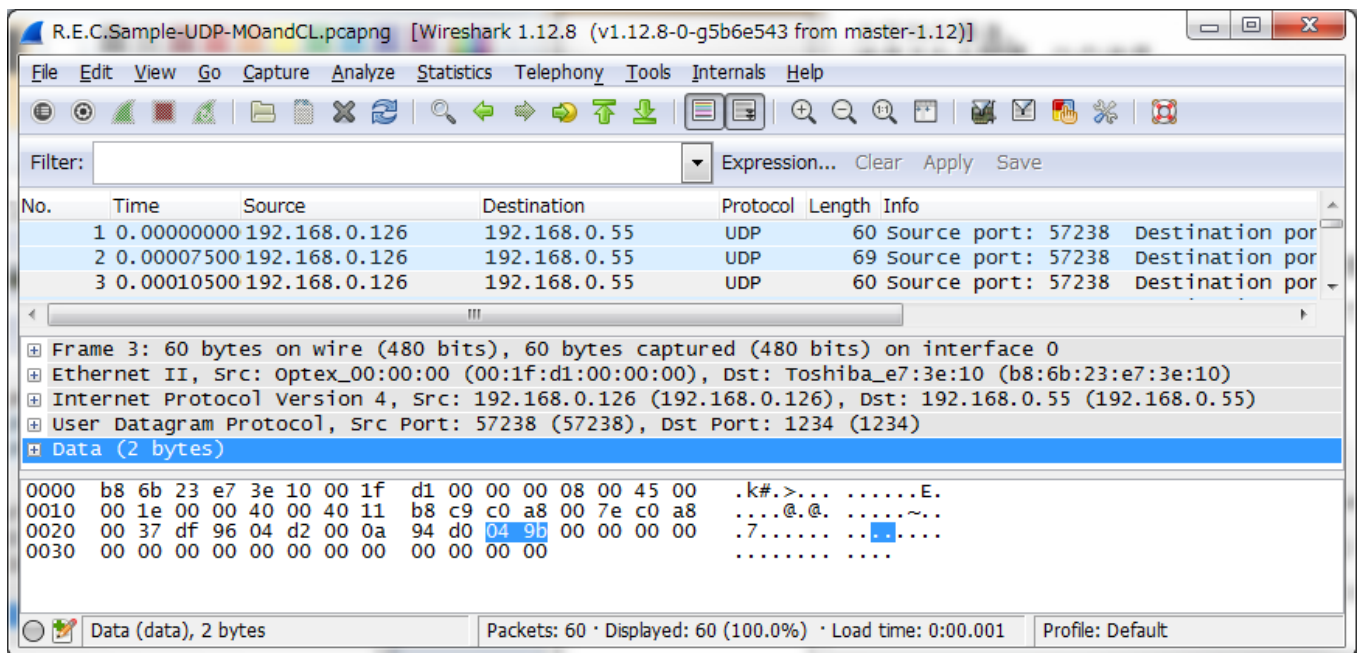


Fig.10 Checksum in the third UDP Packet

6. Sample Packets

Sample Files captured by WireShark are provided.

R.E.C.Sample-TCP-MOandCL.pcapng

R.E.C.Sample-TCP-Multiple.pcapng

R.E.C.Sample-TCP-TAandta.pcapng

R.E.C.Sample-UDP-MOandCL.pcapng

R.E.C.Sample-UDP-Multiple.pcapng

R.E.C.Sample-UDP-TAandta.pcapng