

ผลลัพธ์การวัด ACK Response Time และ การสร้างรายงาน PDF ด้านสถิติ

ได้พัฒนาโปรแกรมวัด ACK Response Time พร้อมสร้างรายงาน PDF ซึ่งมีกราฟและข้อมูลทางสถิติที่เกี่ยวข้องกับการวัดประสิทธิภาพ

<https://www.reportlab.com/docs/reportlab-userguide.pdf>

รูปที่ 1.1 ผลลัพธ์การทำงานของโปรแกรมวัด ACK Response Time

```
(.venv) PS C:\Users\Non\Desktop\การจับคู่ tcp by Non> py .\tcp_req_resp.py
Reading TCP Test 5.pcap...
Total Packets Count : 2960
Packets involving 64.29.17.131: 93
Ord  | Req Pkt  | Resp Pkt  | Resp Time (s)
-----
1    | 113      | 192       | 0.048711
2    | 580      | 759       | 0.004659
3    | 592      | 760       | 0.004545
4    | 688      | 761       | 0.005321
5    | 1014     | 1015      | 0.007032
6    | 2289     | 2290      | 0.039841
7    | 2374     | 2376      | 0.004682
8    | 2390     | 2394      | 0.048567
9    | 2407     | 2409      | 0.005125
10   | 2408     | 2410      | 0.005515
11   | 2438     | 2445      | 0.038863
12   | 2453     | 2456      | 0.047071
13   | 2457     | 2458      | 0.021339
14   | 2581     | 2590      | 0.038260
15   | 2594     | 2597      | 0.045205
16   | 2627     | 2629      | 0.005467
17   | 2628     | 2630      | 0.005379
18   | 2750     | 2754      | 0.005057
19   | 2771     | 2772      | 0.047358
20   | 2775     | 2776      | 0.005333
21   | 2905     | 2906      | 0.039126
22   | 2909     | 2932      | 0.045436
PDF generation complete.

Analysis Results for 64.29.17.131
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[Response Time Statistics (s)]
Min: 0.004545
Max: 0.048711
Avg: 0.023541

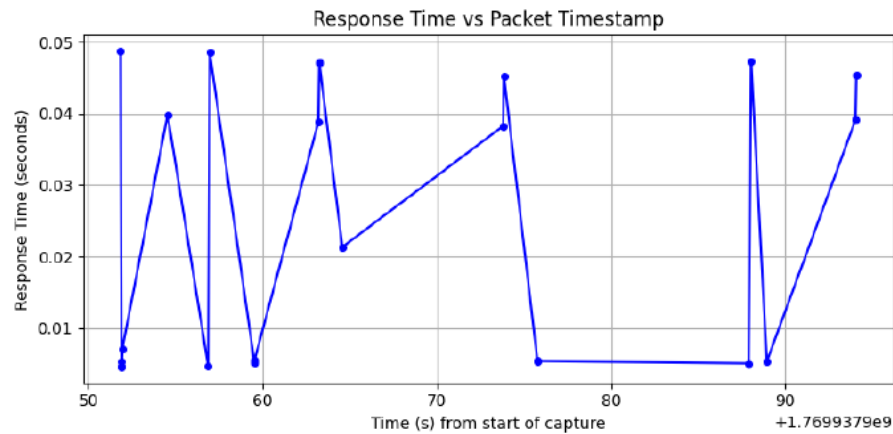
[Request/Response Size Statistics (bytes)]
Request - Min: 85      Max: 752      Avg: 484.29
Response - Min: 60     Max: 416     Avg: 98.68
excuted time = 0.03172
```

รูปที่ 1.2 ผลลัพธ์การทำงาน Wireshark วัด ACK Response Time

ip.addr == 64.29.17.131 and tcp							
No.	Source	s_port	Destination	TCP LEN	d_port	flags	ACKRTT
104	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	0	443	0x002 (SYN)	
111	65070076-fastapi-with-postgre...	443	192.168.1.107	0	51970	0x012 (SYN, ACK)	0.005549000
112	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	0	443	0x010 (ACK)	0.000128000
113	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	288	443	0x018 (PSH, ACK)	
192	65070076-fastapi-with-postgre...	443	192.168.1.107	0	51970	0x010 (ACK)	0.048711000
529	65070076-fastapi-with-postgre...	443	192.168.1.107	1452	51970	0x010 (ACK)	
530	65070076-fastapi-with-postgre...	443	192.168.1.107	1452	51970	0x018 (PSH, ACK)	
531	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	0	443	0x010 (ACK)	0.000013000
532	65070076-fastapi-with-postgre...	443	192.168.1.107	1452	51970	0x010 (ACK)	
533	65070076-fastapi-with-postgre...	443	192.168.1.107	356	51970	0x018 (PSH, ACK)	
534	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	0	443	0x010 (ACK)	0.000008000
580	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	64	443	0x018 (PSH, ACK)	
592	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	136	443	0x018 (PSH, ACK)	
688	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	555	443	0x018 (PSH, ACK)	
759	65070076-fastapi-with-postgre...	443	192.168.1.107	0	51970	0x010 (ACK)	0.004659000
760	65070076-fastapi-with-postgre...	443	192.168.1.107	0	51970	0x010 (ACK)	0.004545000
761	65070076-fastapi-with-postgre...	443	192.168.1.107	0	51970	0x010 (ACK)	0.005321000
1013	65070076-fastapi-with-postgre...	443	192.168.1.107	105	51970	0x018 (PSH, ACK)	
1014	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	31	443	0x018 (PSH, ACK)	0.000304000
1015	65070076-fastapi-with-postgre...	443	192.168.1.107	362	51970	0x018 (PSH, ACK)	0.007032000
1307	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	0	443	0x010 (ACK)	0.044286000
2289	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	694	443	0x018 (PSH, ACK)	
2290	65070076-fastapi-with-postgre...	443	192.168.1.107	240	51970	0x018 (PSH, ACK)	0.039841000
2291	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	0	443	0x010 (ACK)	0.043145000
2373	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	698	443	0x018 (PSH, ACK)	
2374	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	695	443	0x018 (PSH, ACK)	
2376	65070076-fastapi-with-postgre...	443	192.168.1.107	0	51970	0x010 (ACK)	0.004682000
2385	65070076-fastapi-with-postgre...	443	192.168.1.107	93	51970	0x018 (PSH, ACK)	
2386	65070076-fastapi-with-postgre...	443	192.168.1.107	147	51970	0x018 (PSH, ACK)	
2387	65070076-fastapi-with-postgre...	443	192.168.1.107	185	51970	0x018 (PSH, ACK)	
2388	65070076-fastapi-with-postgre...	443	192.168.1.107	31	51970	0x018 (PSH, ACK)	
2389	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	0	443	0x010 (ACK)	0.000025000
2390	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	35	443	0x018 (PSH, ACK)	
2394	65070076-fastapi-with-postgre...	443	192.168.1.107	0	51970	0x010 (ACK)	0.048567000
2407	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	698	443	0x018 (PSH, ACK)	
2408	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	695	443	0x018 (PSH, ACK)	
2409	65070076-fastapi-with-postgre...	443	192.168.1.107	0	51970	0x010 (ACK)	0.005125000
2410	65070076-fastapi-with-postgre...	443	192.168.1.107	0	51970	0x010 (ACK)	0.005515000
2411	65070076-fastapi-with-postgre...	443	192.168.1.107	240	51970	0x018 (PSH, ACK)	
2412	65070076-fastapi-with-postgre...	443	192.168.1.107	69	51970	0x018 (PSH, ACK)	
2413	65070076-fastapi-with-postgre...	443	192.168.1.107	116	51970	0x018 (PSH, ACK)	
2414	65070076-fastapi-with-postgre...	443	192.168.1.107	31	51970	0x018 (PSH, ACK)	
2415	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	0	443	0x010 (ACK)	0.041586000
2438	192.168.1.107	51970	65070076-fastapi-with-postgresql.vercel.app	694	443	0x018 (PSH, ACK)	
2445	65070076-fastapi-with-postgre...	443	192.168.1.107	93	51970	0x018 (PSH, ACK)	0.038863000
2446	65070076-fastapi-with-postgre...	443	192.168.1.107	116	51970	0x018 (PSH, ACK)	

พบว่าค่าที่ได้จาก โปรแกรมที่พัฒนากับ Wireshark มีค่าเท่ากันทุก ACK Response Time (กำลังจัดทำตารางความถูกต้อง)

TCP Analysis Report for 64.29.17.131



Response Time Statistics

Metric	Min	Max	Average
Response Time (s)	0.004545	0.048711	0.023541

Request / Response Size Statistics

Type	Min Size (bytes)	Max Size (bytes)	Avg Size (bytes)
Request	85	752	484.29
Response	60	416	98.68

Program Performance

Metric	Time (seconds)
Program Execution Time	0.0317