

# NTP Analysis

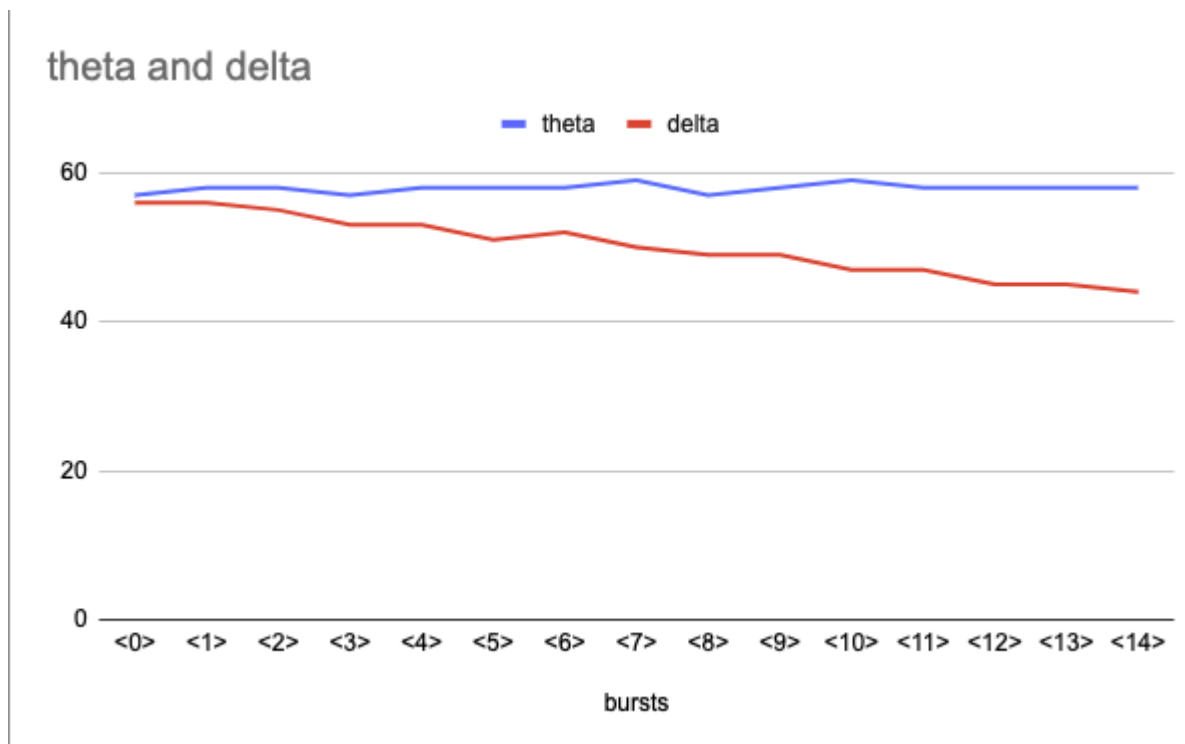
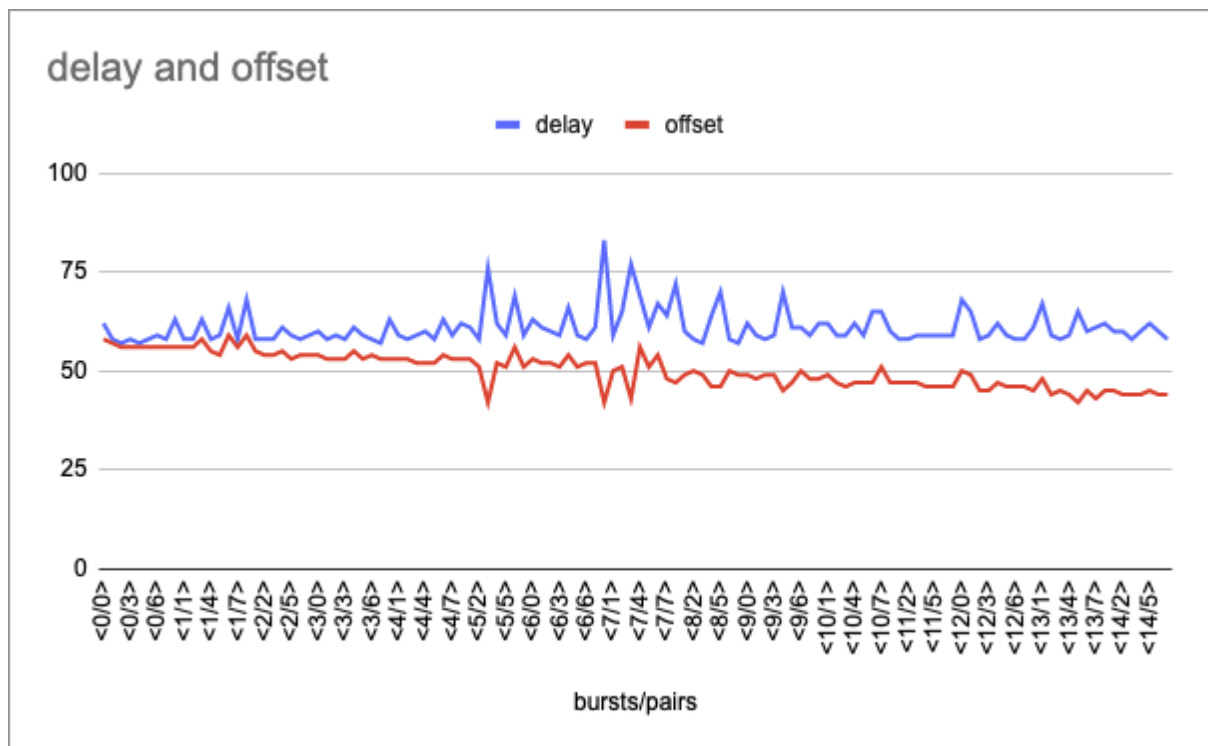
Raw Data:

<https://docs.google.com/spreadsheets/d/1t0tOGmtMwkvY7zxqmViY4OwUXPmLFs-aaaxW8ECeUAA/edit?usp=sharing>

Github :

<https://github.com/Ryo0929/Assignment3>

local to public server



A1



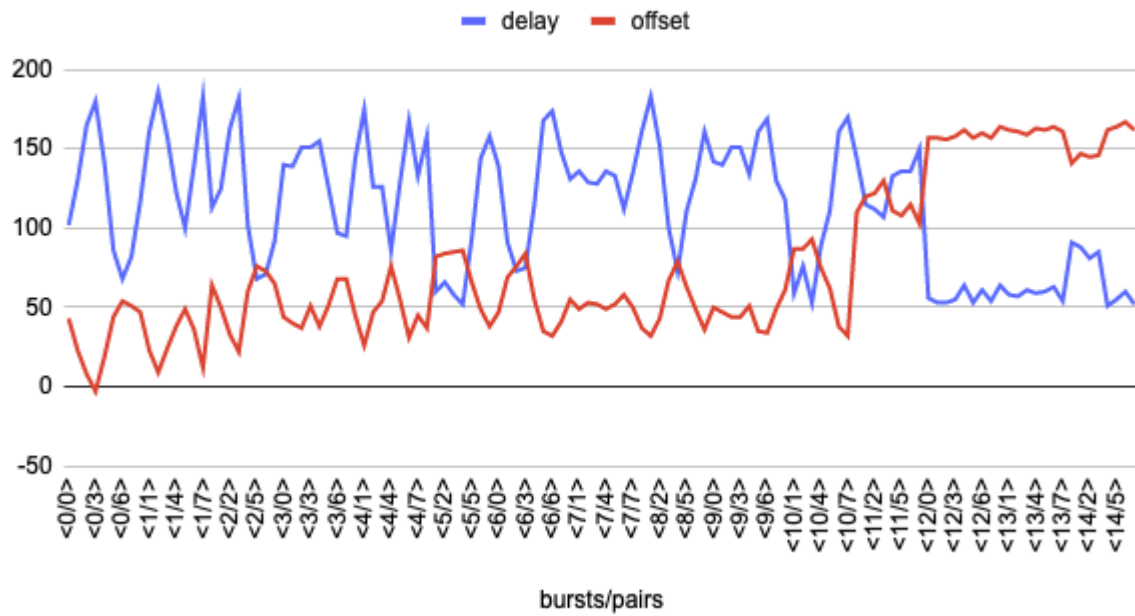
fx

bursts/pairs

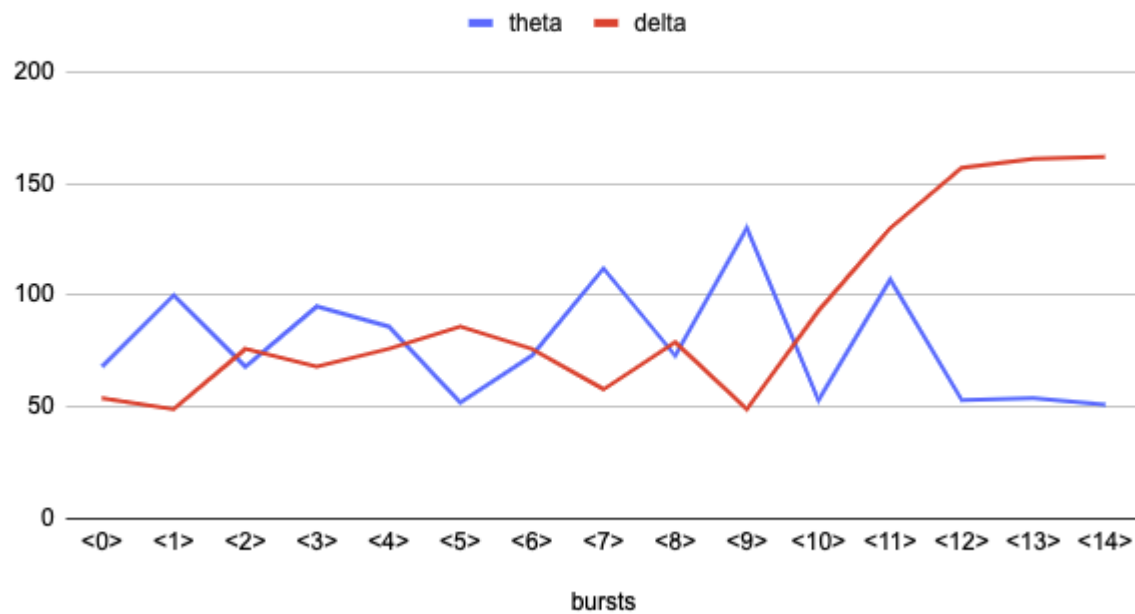
	A	B	C	D	E	F	G	
1	bursts/pairs	delay	offset		bursts	theta	delta	
2	<0/0>	62	58		<0>	57	56	
3	<0/1>	58	57		<1>	58	56	
4	<0/2>	57	56		<2>	58	55	
5	<0/3>	58	56		<3>	57	53	
6	<0/4>	57	56		<4>	58	53	
7	<0/5>	58	56		<5>	58	51	
8	<0/6>	59	56		<6>	58	52	
9	<0/7>	58	56		<7>	59	50	
10	<1/0>	63	56		<8>	57	49	
11	<1/1>	58	56		<9>	58	49	
12	<1/2>	58	56		<10>	59	47	
13	<1/3>	63	58		<11>	58	47	
14	<1/4>	58	55		<12>	58	45	
15	<1/5>	59	54		<13>	58	45	
16	<1/6>	66	59		<14>	58	44	
17	<1/7>	58	56					
18	<2/0>	68	59					
19	<2/1>	58	55					
20	<2/2>	58	54					
21	<2/3>	58	54					
22	<2/4>	61	55					
23	<2/5>	59	53					
24	<2/6>	58	54					
25	<2/7>	59	54					
26	<3/0>	60	54					
27	<3/1>	58	53					
28	<3/2>	59	53					
29	<3/3>	58	53					
30	<3/4>	61	55					
31	<3/5>	59	53					
32	<3/6>	58	54					
33	<3/7>	57	53					
34	<4/0>	63	53					
35	<4/1>	59	53					
36	<4/2>	58	53					
37	<4/3>	59	52					
38	<4/4>	60	52					
39	<4/5>	58	52					
40	<4/6>	63	54					
41	<4/7>	59	53					
42	<5/0>	62	53					
43	<5/1>	61	53					
44	<5/2>	58	51					
45	<5/3>	76	42					
46	<5/4>	62	52					
47	<5/5>	59	51					
48	<5/6>	69	56					
49	<5/7>	59	51					
50	<6/0>	63	53					
51	<6/1>	61	52					
52	<6/2>	60	52					
53	<6/3>	59	51					
54	<6/4>	66	54					

local to cloud server

### delay and offset

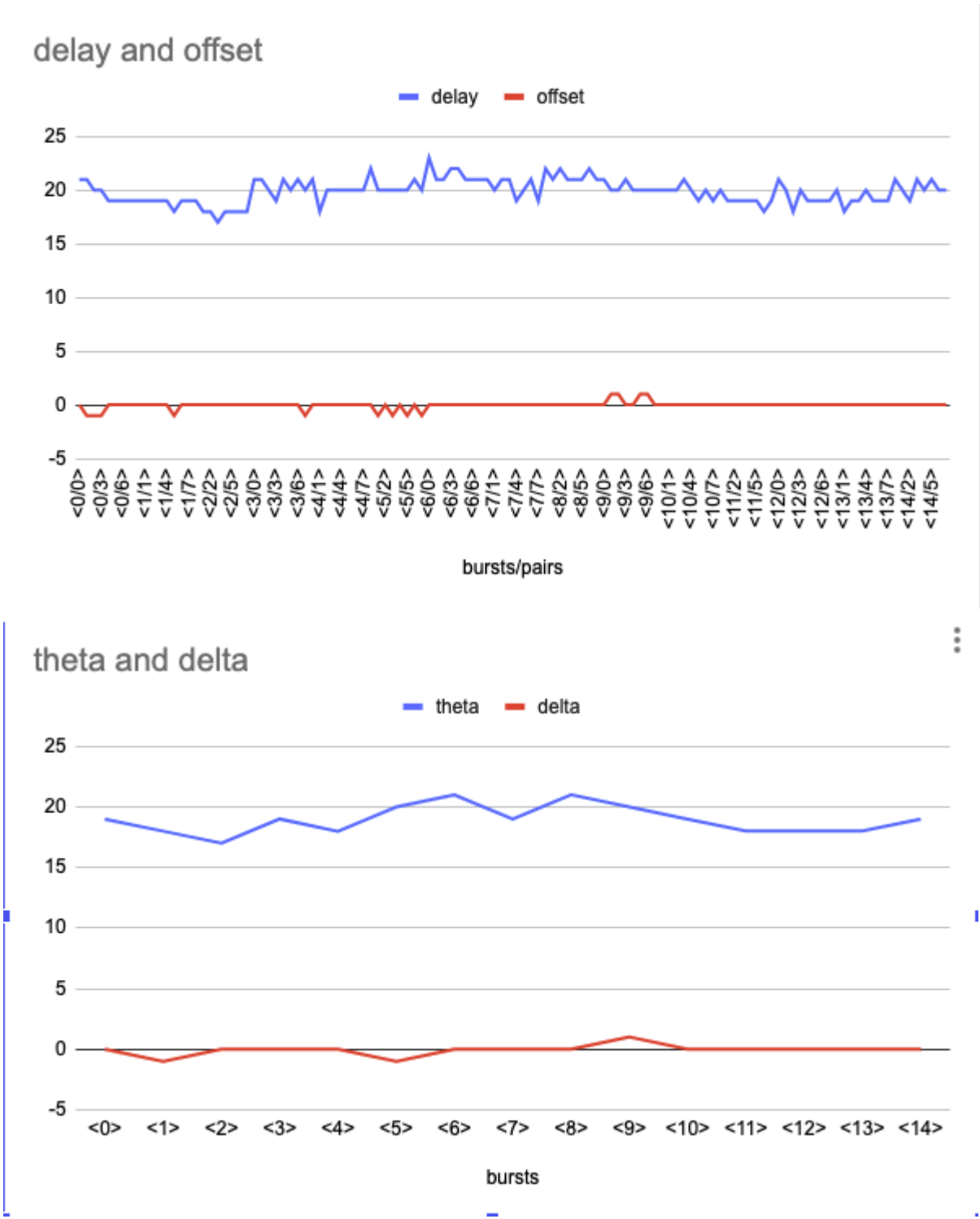


### theta and delta



	A	B	C	D	E	F	G
1	bursts/pairs	delay	offset		bursts	theta	delta
2	<0/0>	102	43		<0>	68	54
3	<0/1>	130	23		<1>	100	49
4	<0/2>	165	8		<2>	68	76
5	<0/3>	180	-3		<3>	95	68
6	<0/4>	141	19		<4>	86	76
7	<0/5>	86	44		<5>	52	86
8	<0/6>	68	54		<6>	73	76
9	<0/7>	82	51		<7>	112	58
10	<1/0>	117	47		<8>	73	79
11	<1/1>	161	23		<9>	130	49
12	<1/2>	186	9		<10>	53	93
13	<1/3>	158	24		<11>	107	130
14	<1/4>	123	38		<12>	53	157
15	<1/5>	100	49		<13>	54	161
16	<1/6>	140	36		<14>	51	162
17	<1/7>	183	12				
18	<2/0>	113	64				
19	<2/1>	125	50				
20	<2/2>	163	33				
21	<2/3>	182	22				
22	<2/4>	102	60				
23	<2/5>	68	76				
24	<2/6>	71	73				
25	<2/7>	92	65				
26	<3/0>	140	44				
27	<3/1>	139	40				
28	<3/2>	151	37				
29	<3/3>	151	51				
30	<3/4>	155	38				
31	<3/5>	126	51				
32	<3/6>	97	68				
33	<3/7>	95	68				
34	<4/0>	144	45				
35	<4/1>	175	26				
36	<4/2>	126	47				
37	<4/3>	126	54				
38	<4/4>	86	76				
39	<4/5>	129	55				
40	<4/6>	168	31				
41	<4/7>	133	45				
42	<5/0>	158	37				
43	<5/1>	60	82				
44	<5/2>	66	84				
45	<5/3>	58	85				
46	<5/4>	52	86				
47	<5/5>	93	66				
48	<5/6>	144	49				
49	<5/7>	158	38				
50	<6/0>	139	47				
51	<6/1>	91	69				
52	<6/2>	73	76				
53	<6/3>	75	84				
54	<6/4>	115	55				

client and server on the same LAN



	A	B	C	D	E	F	G	
1	bursts/pairs	delay	offset		bursts	theta	delta	
2	<0/0>	21	0		<0>	19	0	
3	<0/1>	21	-1		<1>	18	-1	
4	<0/2>	20	-1		<2>	17	0	
5	<0/3>	20	-1		<3>	19	0	
6	<0/4>	19	0		<4>	18	0	
7	<0/5>	19	0		<5>	20	-1	
8	<0/6>	19	0		<6>	21	0	
9	<0/7>	19	0		<7>	19	0	
10	<1/0>	19	0		<8>	21	0	
11	<1/1>	19	0		<9>	20	1	
12	<1/2>	19	0		<10>	19	0	
13	<1/3>	19	0		<11>	18	0	
14	<1/4>	19	0		<12>	18	0	
15	<1/5>	18	-1		<13>	18	0	
16	<1/6>	19	0		<14>	19	0	
17	<1/7>	19	0					
18	<2/0>	19	0					
19	<2/1>	18	0					
20	<2/2>	18	0					
21	<2/3>	17	0					
22	<2/4>	18	0					
23	<2/5>	18	0					
24	<2/6>	18	0					
25	<2/7>	18	0					
26	<3/0>	21	0					
27	<3/1>	21	0					
28	<3/2>	20	0					
29	<3/3>	19	0					
30	<3/4>	21	0					
31	<3/5>	20	0					
32	<3/6>	21	0					
33	<3/7>	20	-1					
34	<4/0>	21	0					
35	<4/1>	18	0					
36	<4/2>	20	0					
37	<4/3>	20	0					
38	<4/4>	20	0					
39	<4/5>	20	0					
40	<4/6>	20	0					
41	<4/7>	20	0					
42	<5/0>	22	0					
43	<5/1>	20	-1					
44	<5/2>	20	0					
45	<5/3>	20	-1					
46	<5/4>	20	0					
47	<5/5>	20	-1					
48	<5/6>	21	0					
49	<5/7>	20	-1					
50	<6/0>	23	0					
51	<6/1>	21	0					
52	<6/2>	21	0					
53	<6/3>	22	0					
54	<6/4>	22	0					

## Dissscussion

Based on the graphs above, we can find a pattern that, in general, the higher the delay number(round trip time) is, the higher the offset value will be, which results in a less accurate current estimate, and vice versa. For example, in NTP communication between LAN, both delay and offset value are quite low, whereas in communication between local and cloud servers, the delay and offset value are generally high and unstable.