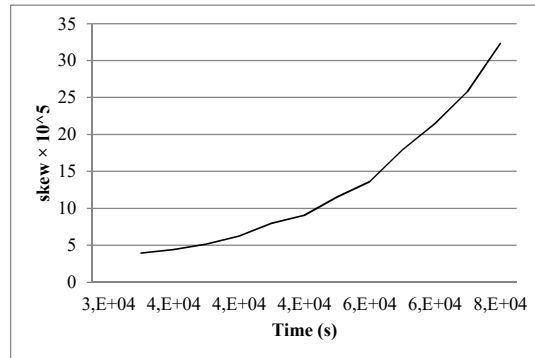


Q11



jour	0	1	2	3	4	5	6	7	8	9	10	11	12
UCT "h:m:s"	09:17:11	13:10:50	11:02:18	12:35:14	11:02:47	10:55:22	12:16:09	14:47:12	15:17:55	14:55:10	16:17:55	18:14:39	21:07:01
UCT "s/day"	33431	47450	39738	45314	39767	39322	44169	53232	55075	53710	58675	65679	76021
UCT "s1-s2"	0	100419	78688	91976	80853	85955	91247	95463	88243	85035	91365	93404	96742
UCT "s"	0	100419	179107	271083	351936	437891	529138	624601	712844	797879	889244	982648	1079390
cp(t) "h:m:s"	00:00:00	13:10:54	11:02:26	12:35:28	11:03:09	10:55:57	12:16:57	14:48:24	15:19:32	14:57:33	16:21:06	18:18:53	21:12:15
cp(t) "s"		100423	179115	271097	351958	437926	529186	624673	712941	798022	889435	982902	1079739
offset	0	4	8	14	22	35	48	72	97	143	191	254	349
skew $\times 10^5$		3,9833099	4,4666038	5,1644699	6,2511366	7,9928567	9,0713576	11,527359	13,607465	17,922517	21,478919	25,84852358	32,33308

Q12

we have $\rho = 40 \times 10^{-5}$ and $\delta = 4$ s

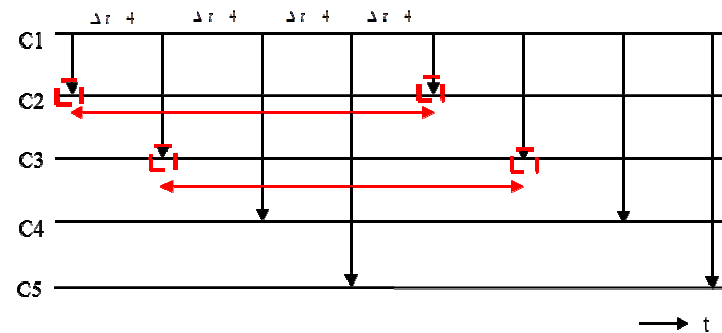
we fix a 4s gap between pair of computers considering the network

we have $\Delta t = 1,38$ hours

$$\Delta t = \frac{4}{2 \times 40 \times 10^{-5}} = 5 \times 10^3$$

$$\Delta t = \frac{5 \times 10^3}{60^2} = 1.38 \text{ hours}$$

with a four loop round robin for C1, to guaranty a 4 s max gap we must have a $1,38h/4 = 0,345h = 20,7 \text{ min} = 20 \text{ min}$ and 42 secondes synchronization delay between pair of computer



Q2

$I = T_3 - T_2$ "s"
 $I_2 = T_4 - T_1$ "s"
 δ

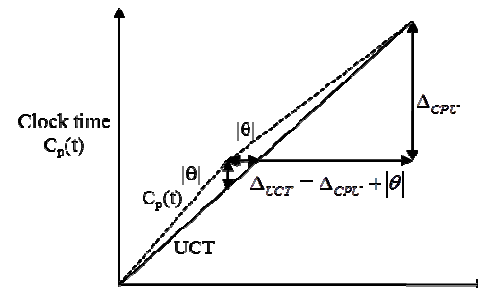
1,25
 2,05
 0,4

$$\delta = \frac{I_2 - I_1}{2}$$

UCT-hc
 θ

=UCT-hc+delay exchange=-5,65+0,4=-5,25

-5,65



$$F_2 = \frac{\Delta_{CPT}}{\Delta_{UCT}} F_1 = \frac{\Delta_{CPT}}{\Delta_{CPT} + |\theta|} F_1$$

$$F_2 = \frac{50}{50 + 5.25} F_1 = 152.48 \text{ MHz}$$

Q3

	Ti	λ_i	ϵ_i	Ti+ ϵ_i
Ts	44027,00	0,00	-295,50	43731,50
T1	43946,00	-81,00	-214,50	43731,50
T2	44271,00	244,00	-539,50	43731,50
T3	42682,00	-1345,00	1049,50	43731,50
		-295,50		
	Hours	Minutes	Seconds	Hundredth
	12	8	51	50

Q4

	(a)	(b)	(c)	(d)	(e)	(f)
Events	N1	N2	N1	N3	N2	N3
T1	100	107	111	127	131	150
T2	99	108	110	125	133	151
T3	103	109	113	126	132	149

At (g), N1, N3 SYNC is $(107-109 + 131-132)/2 = -3/2 = -1,5$
 At (g), N2, N3 SYNC is $(99-103 + 110-113)/2 = -7/2 = -3,5$
 At (g) N1, N2 SYNC is $(127-125+150-151)/2 = 1/2 = 0,5$

then N3, N1 is 1,5
 then N3, N2 is 3,5
 then N2, N1 is -0,5

The (1,3) message pattern is m = (107, 131)

