

## Human vs. AI Analysis:

The table on the left is a comparison of how many requests/responses are being sent to the server in a perfect scenario. A perfect scenario would be if the client and server are both completing each cycle every 50 milliseconds.

Time (sec)	1 AI	2 AIs	3 AIs	4 AIs	5 AIs	6 AIs	7 AIs	8 AIs
1	60	120	180	240	300	360	420	480
2	120	240	360	480	600	720	840	960
3	180	360	540	720	900	1080	1260	1440
4	240	480	720	960	1200	1440	1680	1920
5	300	600	900	1200	1500	1800	2100	2400
6	360	720	1080	1440	1800	2160	2520	2880
7	420	840	1260	1680	2100	2520	2940	3360
8	480	960	1440	1920	2400	2880	3360	3840
9	540	1080	1620	2160	2700	3240	3780	4320
10	600	1200	1800	2400	3000	3600	4200	4800
60	3600	7200	10800	14400	18000	21600	25200	28800

Time (sec)	1 User	2 Users	3 Users	4 Users	5 Users	6 Users	7 Users	8 Users
1	160	320	480	640	800	960	1120	1280
2	320	640	960	1280	1600	1920	2240	2560
3	480	960	1440	1920	2400	2880	3360	3840
4	640	1280	1920	2560	3200	3840	4480	5120
5	800	1600	2400	3200	4000	4800	5600	6400
6	960	1920	2880	3840	4800	5760	6720	7680
7	1120	2240	3360	4480	5600	6720	7840	8960
8	1280	2560	3840	5120	6400	7680	8960	10240
9	1440	2880	4320	5760	7200	8640	10080	11520
10	1600	3200	4800	6400	8000	9600	11200	12800
60	9600	19200	28800	38400	48000	57600	67200	76800

The table on the bottom right shows that as more users connect, the number of calls made to the server results in an increased latency between the client and server. The latency increase was partially caused by running all the clients on the same computer. This was done to see what the worst case scenario would be. We ran a few tests on the computers in the lab and got slightly better performance.

User:AI	1 minute
0:8	4800
1:7	34800
2:6	40800
3:5	46800
4:4	52800
5:3	58800
6:2	64800
7:1	70800
8:0	76800

The table above is a breakdown based on the theoretical perfect scenario taken from the 60 seconds row from the tables on the left. It takes a look at how many calls are made to the server when an AI player is replaced by a user.

User:AI	Human: Time per Cycle in Milliseconds	AI: Time per Cycle in Milliseconds
0:8	0	48.87
1:7	47.65	49.11
2:6	48.00	52.31
3:5	49.63	53.56
4:4	51.46	53.13
5:3	52.50	53.59
6:2	55.54	54.13
7:1	57.06	54.60
8:0	58.71	0