

区块链API性能测试

因客户的实际需求，需要提供区块链平台数据上链与链上数据查询的性能指标。本次对测试环境的服务，使用JMeter工具进行并发压力测试，测试报告如下所示。

1. 数据上链性能测试

1.1 上链情况

每次单条数据上链，请求的并发量分别为500、600、700、800、900、1000，都进行三轮测试。

1.2 测试报告

经过对各个并发量的三轮测试，并发量为500时，性能稳定，上升到900性能比较差。具体情况如下

1.2.1 并发量500

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	500	0	0.00%	17061.52	1571	32928	29889.90	31163.90	32871.18	15.18	7.59	7.12
HTTP Request	500	0	0.00%	17061.52	1571	32928	29889.90	31163.90	32871.18	15.18	7.59	7.12

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	500	0	0.00%	16737.89	1628	32227	29346.70	30908.95	32197.99	15.51	7.76	7.27
HTTP Request	500	0	0.00%	16737.89	1628	32227	29346.70	30908.95	32197.99	15.51	7.76	7.27

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	500	0	0.00%	16787.86	1574	31922	29291.40	30592.90	31855.97	15.66	7.83	7.34
HTTP Request	500	0	0.00%	16787.86	1574	31922	29291.40	30592.90	31855.97	15.66	7.83	7.34

1.2.2 并发量600

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	600	90	15.00%	14871.64	535	33587	29924.70	32282.15	33580.00	17.86	13.15	7.13
HTTP Request	600	90	15.00%	14871.64	535	33587	29924.70	32282.15	33580.00	17.86	13.15	7.13

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	600	90	15.00%	14405.41	480	31453	28977.90	30405.95	31381.95	19.04	14.21	7.60
HTTP Request	600	90	15.00%	14405.41	480	31453	28977.90	30405.95	31381.95	19.04	14.21	7.60

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	600	90	15.00%	15180.01	585	34003	30346.30	32698.85	33747.99	17.64	12.99	7.04
HTTP Request	600	90	15.00%	15180.01	585	34003	30346.30	32698.85	33747.99	17.64	12.99	7.04

1.2.3 并发量700

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	700	190	27.14%	12625.58	651	32923	29046.60	30670.50	32827.00	21.25	20.09	7.30
HTTP Request	700	190	27.14%	12625.58	651	32923	29046.60	30670.50	32827.00	21.25	20.09	7.30

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	700	190	27.14%	12834.31	572	33128	29624.30	30940.90	33065.98	21.12	19.96	7.23
HTTP Request	700	190	27.14%	12834.31	572	33128	29624.30	30940.90	33065.98	21.12	19.96	7.23

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	700	190	27.14%	12800.68	530	33321	29453.60	31052.25	33317.95	21.00	19.84	7.20
HTTP Request	700	190	27.14%	12800.68	530	33321	29453.60	31052.25	33317.95	21.00	19.84	7.20

1.2.4 并发量800

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	800	287	35.88%	11398.20	563	33388	28364.90	30971.15	33155.96	23.96	26.44	7.21
HTTP Request	800	287	35.88%	11398.20	563	33388	28364.90	30971.15	33155.96	23.96	26.44	7.21

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	800	290	36.25%	11354.92	662	33521	28478.80	31328.20	33335.99	23.86	26.21	7.17
HTTP Request	800	290	36.25%	11354.92	662	33521	28478.80	31328.20	33335.99	23.86	26.21	7.17

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	800	290	36.25%	11160.51	664	32355	27961.50	30098.30	32107.86	24.72	26.82	7.40
HTTP Request	800	290	36.25%	11160.51	664	32355	27961.50	30098.30	32107.86	24.72	26.82	7.40

1.2.5 并发量900

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	900	390	43.33%	10290.38	796	33509	28342.70	31017.80	33324.79	26.85	33.16	7.19
HTTP Request	900	390	43.33%	10290.38	796	33509	28342.70	31017.80	33324.79	26.85	33.16	7.19

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	900	390	43.33%	10670.08	826	34316	29244.10	31929.35	34129.74	26.20	32.30	7.04
HTTP Request	900	390	43.33%	10670.08	826	34316	29244.10	31929.35	34129.74	26.20	32.30	7.04

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	900	390	43.33%	10215.46	751	32368	27756.10	29799.95	32164.99	27.80	34.84	7.46
HTTP Request	900	390	43.33%	10215.46	751	32368	27756.10	29799.95	32164.99	27.80	34.84	7.46

2. 链上数据查询性能测试

2.1 查询情况

每次查询一条数据，请求的并发量分别为500、600、700、800、900、1000，都进行三轮测试。

2.2 测试报告

经过对各个并发量的三轮测试，并发量为500时，性能稳定，上升到900性能比较差。具体情况如下

2.2.1 并发量500

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	500	0	0.00%	16639.82	1475	31835	28790.00	30251.00	31781.96	15.71	11.50	7.67
HTTP Request	500	0	0.00%	16639.82	1475	31835	28790.00	30251.00	31781.96	15.71	11.50	7.67

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	500	0	0.00%	16039.08	1381	30834	28175.90	29396.95	30603.58	16.22	11.88	7.92
HTTP Request	500	0	0.00%	16039.08	1381	30834	28175.90	29396.95	30603.58	16.22	11.88	7.92

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	500	0	0.00%	16162.71	1527	30751	28316.60	29587.10	30697.77	16.25	11.91	7.94
HTTP Request	500	0	0.00%	16162.71	1527	30751	28316.60	29587.10	30697.77	16.25	11.91	7.94

2.2.2 并发量600

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	600	90	15.00%	13880.69	555	31149	27576.80	29999.65	31138.00	19.26	18.16	8.01
HTTP Request	600	90	15.00%	13880.69	555	31149	27576.80	29999.65	31138.00	19.26	18.16	8.01

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	600	90	15.00%	14209.69	555	31830	28395.40	30608.90	31539.92	18.82	17.93	7.83
HTTP Request	600	90	15.00%	14209.69	555	31830	28395.40	30608.90	31539.92	18.82	17.93	7.83

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	600	90	15.00%	13766.39	486	31312	28144.90	29348.95	30809.74	19.16	17.99	7.97
HTTP Request	600	90	15.00%	13766.39	486	31312	28144.90	29348.95	30809.74	19.16	17.99	7.97

2.2.3 jmeter/并发量700

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	700	190	27.14%	12601.17	679	32450	28716.00	30261.60	32431.94	21.55	23.56	7.69
HTTP Request	700	190	27.14%	12601.17	679	32450	28716.00	30261.60	32431.94	21.55	23.56	7.69

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	700	190	27.14%	12257.55	693	31269	28061.00	29495.70	31118.97	22.38	24.96	8.01
HTTP Request	700	190	27.14%	12257.55	693	31269	28061.00	29495.70	31118.97	22.38	24.96	8.01

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	700	190	27.14%	12145.99	660	31293	27695.60	29317.00	31219.00	22.37	25.00	7.97
HTTP Request	700	190	27.14%	12145.99	660	31293	27695.60	29317.00	31219.00	22.37	25.00	7.97

2.2.4 并发量800

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	800	290	36.25%	10792.36	692	31313	26659.50	28734.20	30980.85	25.54	32.14	8.03
HTTP Request	800	290	36.25%	10792.36	692	31313	26659.50	28734.20	30980.85	25.54	32.14	8.03

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	800	290	36.25%	10618.59	735	31493	26831.10	29216.00	31367.17	25.40	31.84	7.92
HTTP Request	800	290	36.25%	10618.59	735	31493	26831.10	29216.00	31367.17	25.40	31.84	7.92

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	800	290	36.25%	10817.48	584	31824	27228.60	29736.15	31781.00	25.10	31.04	7.83
HTTP Request	800	290	36.25%	10817.48	584	31824	27228.60	29736.15	31781.00	25.10	31.04	7.83

2.2.5 并发量900

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	900	390	43.33%	10019.12	788	31813	26936.90	29615.95	31537.96	28.29	38.52	7.95
HTTP Request	900	390	43.33%	10019.12	788	31813	26936.90	29615.95	31537.96	28.29	38.52	7.95

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	900	389	43.22%	9771.00	622	31790	27118.40	29516.70	31550.00	28.31	38.37	7.89
HTTP Request	900	389	43.22%	9771.00	622	31790	27118.40	29516.70	31550.00	28.31	38.37	7.89

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label ^	#Samples ⇅	KO ⇅	Error % ⇅	Average ⇅	Min ⇅	Max ⇅	90th pct ⇅	95th pct ⇅	99th pct ⇅	Transactions/s ⇅	Received ⇅	Sent ⇅
Total	900	390	43.33%	9727.56	612	31803	26940.60	29518.75	31503.58	28.29	38.69	7.88
HTTP Request	900	390	43.33%	9727.56	612	31803	26940.60	29518.75	31503.58	28.29	38.69	7.88