Joakim Frostegård, 2021-08-19

BitTorrent (UDP) tracker comparison

This is a performance comparison of several programs implementing the UDP BitTorrent tracker protocol made using *aquatic_udp_load_test*.

Setup

Tested trackers

Tracker	URL	Commit
aquatic_udp	https://github.com/greatest-ape/aquatic	cb42736
opentracker	http://erdgeist.org/arts/software/opentracker/	9a20ebe

I had intended to include chihaya (https://github.com/chihaya/chihaya) Unfortunately, it kept panicking while running the load test. This is a known problem (https://github.com/chihaya/chihaya/issues/524). Reducing recv_buffer to the default 60000 did make it last for one run before crashing, with the result of 89k responses per second.

Hardware

Hetzner CCX52: 32 dedicated vCPUs, 128GB RAM, AMD Milan Epyc 7003

Load test configuration

The default load test configuration was used, except for the following changes:

Setting	Value
duration	60
weight_announce	5
recv_buffer	104857600

System information

Software	Info
Ubuntu	Version: 20.04
Linux	Version: 5.4.0-81-generic sysctl -w net.core.rmem_max=104857600 sysctl -w net.core.rmem_default=104857600
rustc	Version: 1.54.0
gcc	Version: 9.3.0

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Results

aquatic_udp

Results are ordered by total number of tracker workers and then by number of responses per second. Best results within a worker number tier are marked in bold.

Tracker setting *socket_recv_buffer_size* was set to 104857600.

Tracker workers in total	Tracker socket workers	Tracker request workers	Responses per second	Load test socket workers	Load test request workers
16	15	1	595k	13	3
16	14	2	708k	12	4
16	12	4	752k	13	3
16	13	3	750k	7	3
16	13	3	765k	12	6
16	13	3	775k	8	8
16	**13**	**3**	**785k**	**13**	**3**
10	8	2	725k	13	3
10	6	4	744k	13	3
10	7	3	764k	13	3
10	7	3	767k	7	3
10	6	4	788k	7	3
10	5	5	797k	8	8
10	5	5	810k	5	5
10	**5**	**5**	**826k**	**7**	**3**
7	5	2	786k	7	3
8	4	4	801k	8	8
8	5	3	805k	7	3
8	**5**	**3**	**850k**	**8**	**8**
6	3	3	693k	8	8
6	4	2	741k	8	8
6	**4**	**2**	**757k**	**8**	**4**
4	3	1	579k	4	4
4	3	1	596k	8	8

Tracker workers in total	Tracker socket workers	Tracker request workers	Responses per second	Load test socket workers	Load test request workers
4	**3**	**1**	**603k**	**8**	**4**
3	2	1	508k	8	4
3	**2**	**1**	**597k**	**4**	**4**
2	1	1	300k	2	2
2	**1**	**1**	**309k**	**4**	**4**

opentracker

Tracker workers	Responses per second	Load test socket workers	Load test request workers
16	138k	13	3
16	**139k**	**4**	**4**
16	129k	8	8
10	154k	7	3
10	**165k**	**4**	**4**
8	324k	8	8
8	364k	8	4
8	**431k**	**4**	**4**
6	558k	8	4
6	575k	8	8
6	**587k**	**4**	**4**
4	481k	4	4
4	460k	8	8
4	**481k**	**8**	**4**
3	**397k**	**4**	**4**
2	**293k**	**4**	**4**
1	**232k**	**4**	**4**
0	**199k**	**4**	**4**

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Summary

The best throughput of aquatic (850k responses per second with 8 workers) was 44.8% faster than that of opentracker (587k responses per second with 6 workers).

Tracker responses per second, best result marked in bold:

Number of worker threads	aquatic	opentracker
1	n/a	**232k**
2	**309k**	293k
3	**597k**	397k
4	**603k**	481k
6	**757k**	587k
8	**850k**	431k
10	**826k**	165k
16	**785k**	139k