

Quark / gVisor / Kata Performance Comparison

Startup and Memory overhead

	Runc	Quark	gVsior	Kata
Startup (ms)	607	625	708	1747

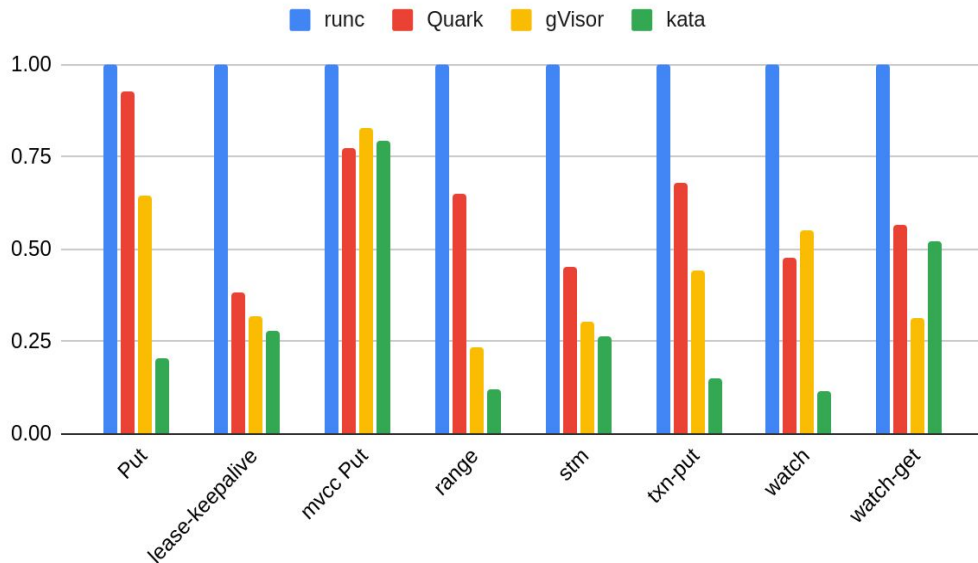
- Quark startup time is almost same as Runc
- Kata startup time is almost 3 folders of Quark

	Quark	gVsior	Kata
Memory Overhead (MB)	11.8	28.1	184.3

- Quark memory overhead is minimal
 - gVisor takes more than 2 times memory
 - Kata takes 15 times memory

Etcd v3

runc, Quark, gVisor and kata



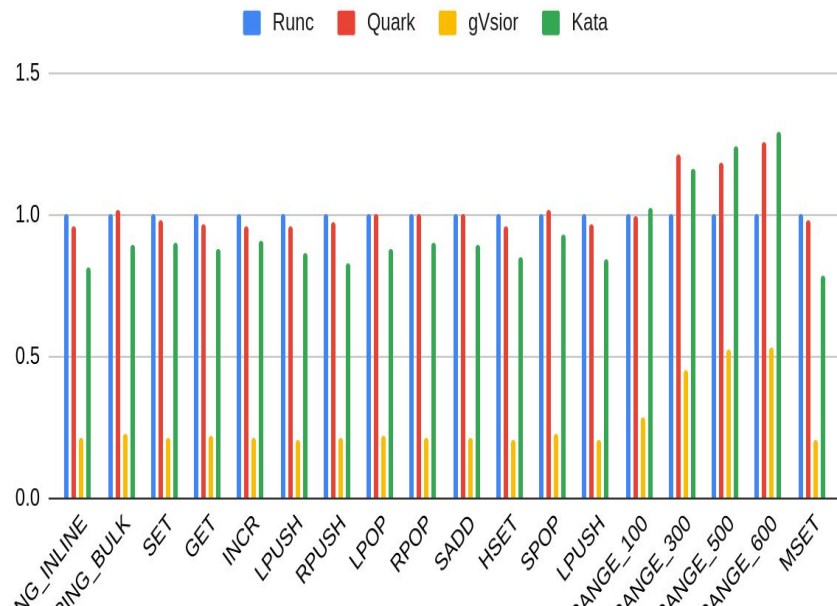
- Quark is fast
- Kata is very slow in some benchmark

	runc	Quark	gVisor	kata
Put	3741	3471	2408	770
lease-keepalive	17884	6803	5647	4983
mvcc Put	127377	98251	105232	101257
range	7856	5118	1837	932
stm	7878	3545	2379	2059
txn-put	4934	3359	2190	747
watch	243689	116216	134686	28036
watch-get	3419	1942	1072	1775

Redis

- Quark is almost same as Runc
- Gvisor is very slow

Runc, Quark, gVsiior and Kata



	Runc	Quark	gVsiior	Kata
PING_INLINE	38476	36792	8205	31447
PING_BULK	37580	38241	8482	33602
SET	38595	37864	8349	34698
GET	38625	37425	8375	34048
INCR	38521	37037	8316	34868
LPUSH	39231	37509	8214	33841
RPUSH	38956	37951	8259	32394
LPOP	37355	37341	8212	32949
RPOP	38270	38432	8270	34507
SADD	39370	39355	8297	35311
HSET	39541	37821	8205	33580
SPOP	37341	37879	8467	34783
LPUSH	39370	37922	8206	33212
LRANGE_100	24178	24143	6956	24704
LRANGE_300	11159	13504	5014	12980
LRANGE_500	8091	9573	4232	10044
LRANGE_600	6329	7937	3385	8177

Nginx (Http Get)

	Runc	Quark	gVsior	Kata
RPS (Request Per Second)	6136	2274.74	1296.7	928.96

- Quark RPS is must faster than gVisor and Kata
- Kata is slowest.

MariaDB/MySql Initialization Time

	Runc	Quark	gVsior	Kata
MariaDB (Second)	8	10	14	12
MySql (Second)	18	20	32	N/A

- Quark is fastest in secure container
- Note: Kata can't run Mysql

Summary

- Quark's memory overhead is minimal
- Quark's startup overhead is minimal
- Quark is performance is best in secure container runtime