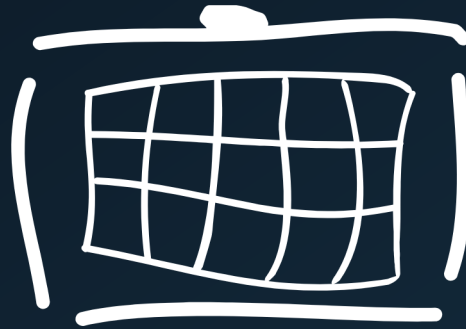




Radiator

PERFORMANCE REPORT

RadiatorDB customer database performance

Software version: 10.33.4 (58-ga9f28ebc6)

Build type: Nightly

Date: 2026-07-16

Performance Report Introduction & Disclaimer

A complete RADIUS solution has two main layers. The RADIUS server controls the traffic. Backend databases or directories store user credentials and session logs.

The RADIUS server is fast and needs few hardware resources. Overall performance also depends on the authentication method and the backend workload. For example, a simple read is usually faster than a complex write. Backend systems often need more resources than the RADIUS server.

Important Notice

The results in this report come from a controlled test environment. Actual performance depends on the hardware, software versions, configuration, workload, and current system load. Results in another environment may be different.

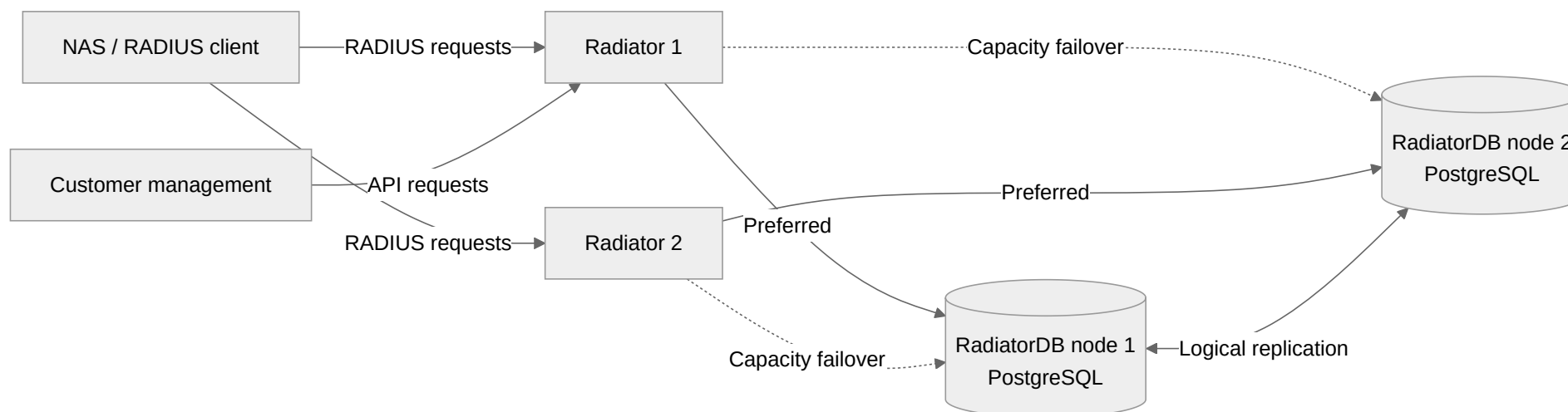
This report is for information only. It does not provide any express or implied warranty. The results are suitable for general comparison and capacity planning. Users should test a representative workload in their own environment before making final sizing or purchasing decisions.

RadiatorDB customer database performance

This benchmark measures authentication and customer-management performance with one million subscriber records stored in RadiatorDB.

Topology

Two Radiator instances receive RADIUS requests. Customer-management requests target Radiator 1. Each Radiator prefers its corresponding RadiatorDB node and uses the other fully replicated, multi-primary node for capacity failover.



Both database nodes accept reads and writes. Each Radiator uses its preferred node while that node has an available database connection. It uses the other node when all connections in the preferred pool are busy or the preferred node is unavailable. RadiatorDB replicates changes to the other node.

Each authentication workload runs twice. The first run sends all requests to Radiator 1. The second run divides requests evenly between both Radiators. Customer-management workloads use Radiator 1 only.

Data set

The benchmark restores one million customers before operational testing. Authentication requests select identities from the full data set.

Each customer contains credentials, contact information, a product type, and optional suspension information. Successful authentication can also maintain a separate last-login record with the NAS and assigned client addresses.

Customer-management steps operate on 20,000 customers. This keeps each step focused on sustained request throughput while all lookups and writes still use the full database and its indexes.

Workloads

The steps run in order and retain changes made by earlier steps. They cover:

- Restoring one million subscribers and waiting for replication.
- Read-only PAP authentication through one Radiator and then two Radiators.
- PAP authentication with last-login and password-hash updates through one Radiator and then two Radiators.
- Reading customer records.
- Suspending and resuming customers.
- Changing products and passwords.
- Deleting the management sample.

Interpreting results

The read-only authentication result represents the highest-throughput path. Authentication with updates is slower because each successful request adds database writes and replication work. Customer changes create RadiatorDB revision history, so their results include document, history, and replication costs.

The suspension, resume, product-change, and password-change steps model events that could trigger a Change of Authorization (CoA) or Disconnect-Request in a production deployment. This benchmark measures the database changes only and does not send CoA packets.

Results

Every performance scenario runs on a **16-core, 32 GiB virtual machine**. Individual services are constrained by the container CPU and memory limits shown in the results.

Summary Table

Test	Status / Run time	TPS	Max RAM	CPU p95	Notes	Size
radiatordb_customer_db / 01_restore_1M_subscribers	PASS (69.7s)	46360 (> 40000)	14.3MiB	0.5%	Logs: 130, Transactions: 1000000	4CPU/8192MiB
radiatordb_customer_db / 02_radius_auth_raw_single_radiator	PASS (10.1s)	34432 (> 27000)	18.7MiB	319.6%	Logs: 346153, Transactions: 346133	4CPU/8192MiB
radiatordb_customer_db / 03_radius_auth_raw_dual_load_balancing	PASS (10.1s)	52538 (> 32000)	18.1MiB	248.6%	Logs: 527544, Transactions: 527526	4CPU/8192MiB
radiatordb_customer_db / 04_radius_auth_and_update_single_radiator	PASS (10.1s)	4609 (> 4300)	19.2MiB	122.8%	Logs: 46307, Transactions: 46287	4CPU/8192MiB
radiatordb_customer_db / 05_radius_auth_and_update_dual_load_balancing	PASS (10.1s)	6333 (> 4300)	18.9MiB	93.3%	Logs: 63682, Transactions: 63664	4CPU/8192MiB
radiatordb_customer_db / 06_read	PASS (3.8s)	5411 (> 4650)	24.7MiB	169.5%	Logs: 20006, Transactions: 20000	4CPU/8192MiB
radiatordb_customer_db / 07_suspend	PASS (6.9s)	2957 (> 1900)	26.8MiB	119.8%	Logs: 20012, Transactions: 20000	4CPU/8192MiB
radiatordb_customer_db / 08_resume	PASS (6.2s)	3277 (> 2000)	26.4MiB	128.4%	Logs: 20012, Transactions: 20000	4CPU/8192MiB
radiatordb_customer_db / 09_change_product	PASS (6.3s)	3203 (> 2200)	26.3MiB	125.5%	Logs: 20013, Transactions: 20000	4CPU/8192MiB
radiatordb_customer_db / 10_change_password	PASS (6.3s)	3209 (> 2150)	26.6MiB	124.4%	Logs: 20014, Transactions: 20000	4CPU/8192MiB
radiatordb_customer_db / 11_delete	PASS (4.4s)	4643 (> 3300)	26.8MiB	119.3%	Logs: 20008, Transactions: 20000	4CPU/8192MiB

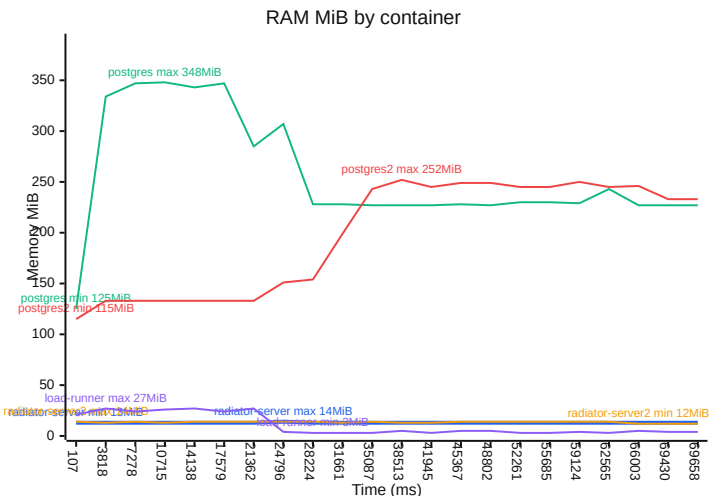
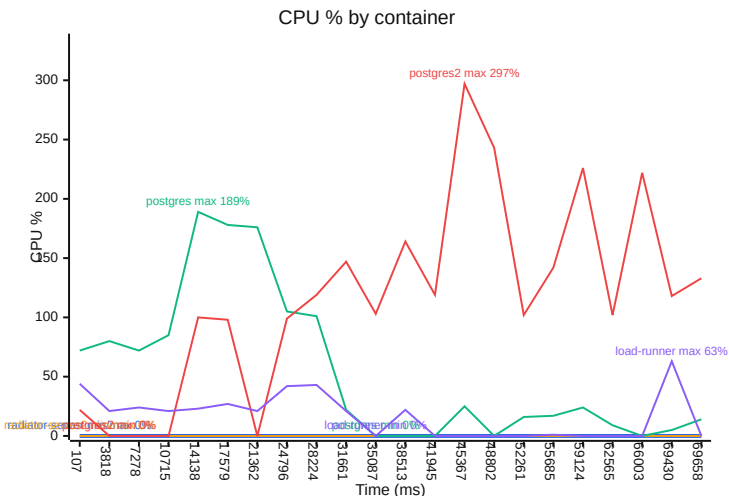


radiatordb_customer_db / 01_restore_1M_subscribers

Test	Status / Run time	TPS	Max RAM	CPU p95	Notes	Size
radiatordb_customer_db / 01_restore_1M_subscribers	PASS (69.7s)	46360 (> 40000)	14.3MiB	0.5%	Logs: 130, Transactions: 1000000	4CPU/8192MiB

Resource usage

Series	Container	Samples	Avg CPU	95% CPU	Max RAM	Size
1	radiator-server	603	0%	0.5%	14.3MiB	4CPU/8192MiB
2	radiator-server2	603	0%	0.5%	15.2MiB	4CPU/8192MiB
3	postgres	603	56.3%	195.6%	355.9MiB	4CPU/8192MiB
4	postgres2	603	115.1%	231.9%	256.4MiB	4CPU/8192MiB
5	load-runner	603	17.5%	67.3%	32.1MiB	Unlimited

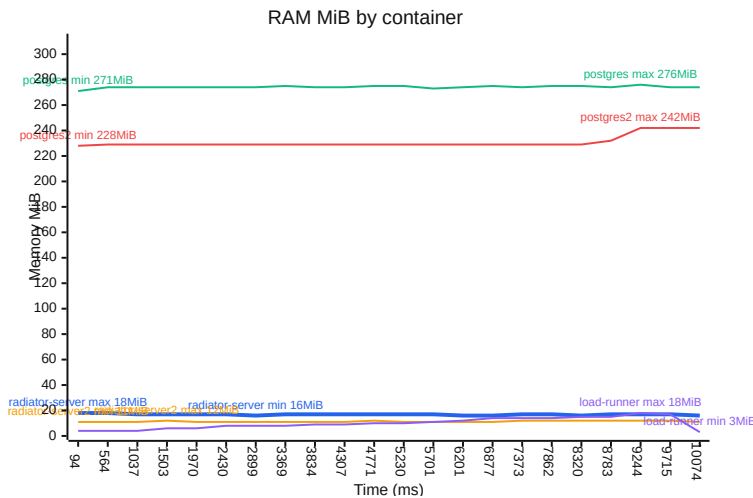
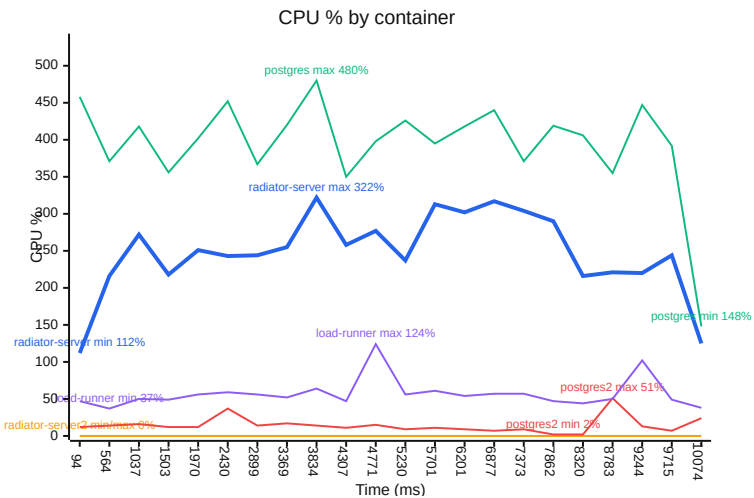


radiatordb_customer_db / 02_radius_auth_raw_single_radiator

Test	Status / Run time	TPS	Max RAM	CPU p95	Notes	Size
radiatordb_customer_db / 02_radius_auth_raw_single_radiator	PASS (10.1s)	34432 (> 27000)	18.7MiB	319.6%	Logs: 346153, Transactions: 346133	4CPU/8192MiB

Resource usage

Series	Container	Samples	Avg CPU	95% CPU	Max RAM	Size
1	radiator-server	84	257.9%	319.6%	18.7MiB	4CPU/8192MiB
2	radiator-server2	84	0%	0.5%	12.5MiB	4CPU/8192MiB
3	postgres	84	407.9%	463.7%	276.9MiB	4CPU/8192MiB
4	postgres2	84	15%	37.9%	242.9MiB	4CPU/8192MiB
5	load-runner	84	58.8%	102.3%	18.5MiB	Unlimited

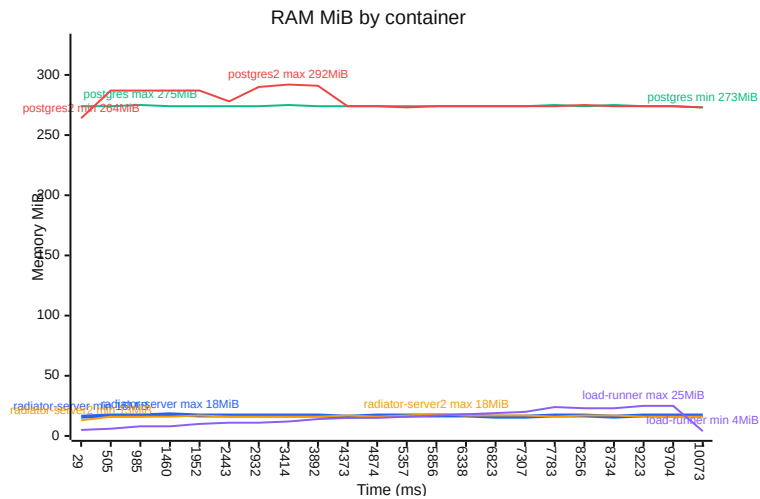
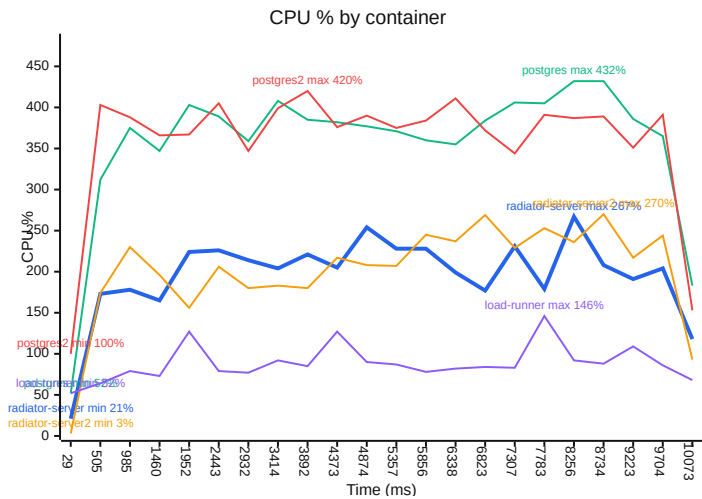


radiatordb_customer_db / 03_radius_auth_raw_dual_load_balancing

Test	Status / Run time	TPS	Max RAM	CPU p95	Notes	Size
radiatordb_customer_db / 03_radius_auth_raw_dual_load_balancing	PASS (10.1s)	52538 (> 32000)	18.1MiB	248.6%	Logs: 527544, Transactions: 527526	4CPU/8192MiB

Resource usage

Series	Container	Samples	Avg CPU	95% CPU	Max RAM	Size
1	radiator-server	84	205.7%	248.6%	18.1MiB	4CPU/8192MiB
2	radiator-server2	84	200.4%	256%	18.1MiB	4CPU/8192MiB
3	postgres	84	373.6%	421.6%	276.1MiB	4CPU/8192MiB
4	postgres2	84	374.8%	421.2%	293MiB	4CPU/8192MiB
5	load-runner	84	87.4%	127.2%	27.7MiB	Unlimited

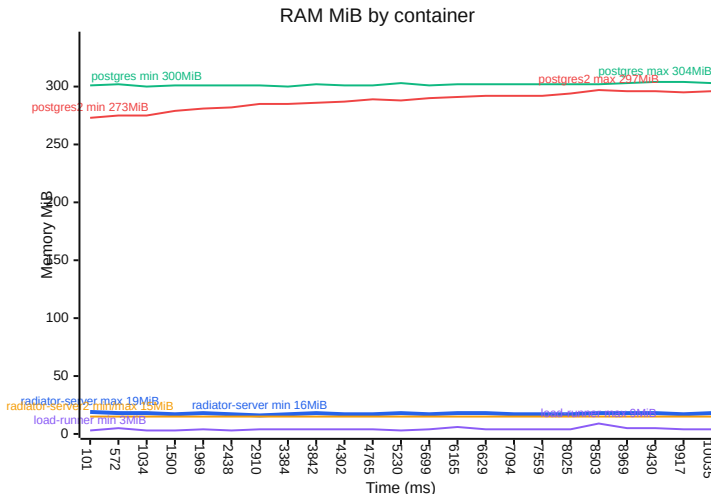
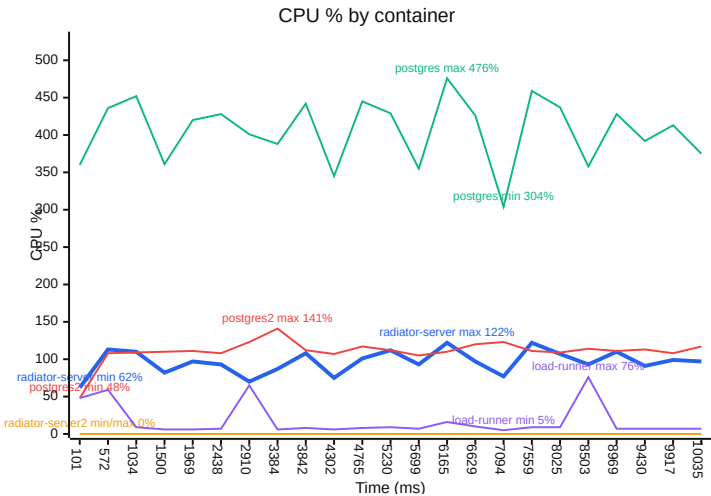


radiatordb_customer_db / 04_radius_auth_and_update_single_radiator

Test	Status / Run time	TPS	Max RAM	CPU p95	Notes	Size
radiatordb_customer_db / 04_radius_auth_and_update_single_radiator	PASS (10.1s)	4609 (> 4300)	19.2MiB	122.8%	Logs: 46307, Transactions: 46287	4CPU/8192MiB

Resource usage

Series	Container	Samples	Avg CPU	95% CPU	Max RAM	Size
1	radiator-server	86	94.4%	122.8%	19.2MiB	4CPU/8192MiB
2	radiator-server2	86	0%	0.5%	15.9MiB	4CPU/8192MiB
3	postgres	86	403.6%	476.2%	304.6MiB	4CPU/8192MiB
4	postgres2	86	113.4%	129.1%	298.1MiB	4CPU/8192MiB
5	load-runner	86	15.6%	65.2%	10MiB	Unlimited

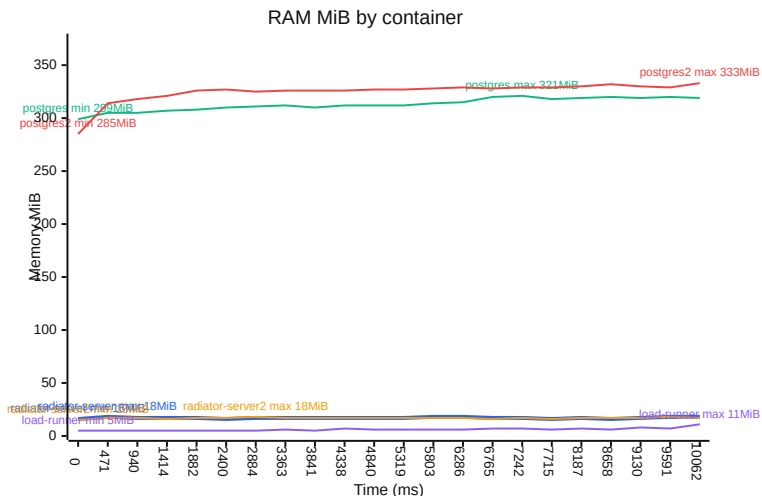
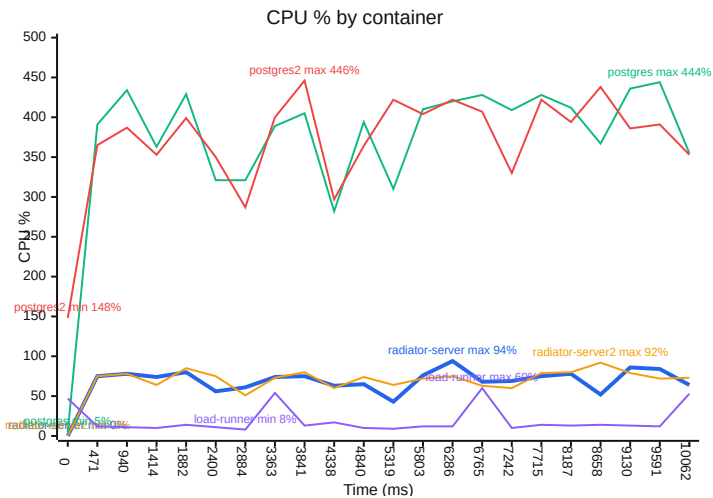


radiatordb_customer_db / 05_radius_auth_and_update_dual_load_balancing

Test	Status / Run time	TPS	Max RAM	CPU p95	Notes	Size
radiatordb_customer_db / 05_radius_auth_and_update_dual_load_balancing	PASS (10.1s)	6333 (> 4300)	18.9MiB	93.3%	Logs: 63682, Transactions: 63664	4CPU/8192MiB

Resource usage

Series	Container	Samples	Avg CPU	95% CPU	Max RAM	Size
1	radiator-server	85	69.1%	93.3%	18.9MiB	4CPU/8192MiB
2	radiator-server2	85	73%	92.2%	18.9MiB	4CPU/8192MiB
3	postgres	85	384.5%	465.6%	322.7MiB	4CPU/8192MiB
4	postgres2	85	385.6%	455.9%	333.7MiB	4CPU/8192MiB
5	load-runner	85	19.4%	67.9%	11.1MiB	Unlimited

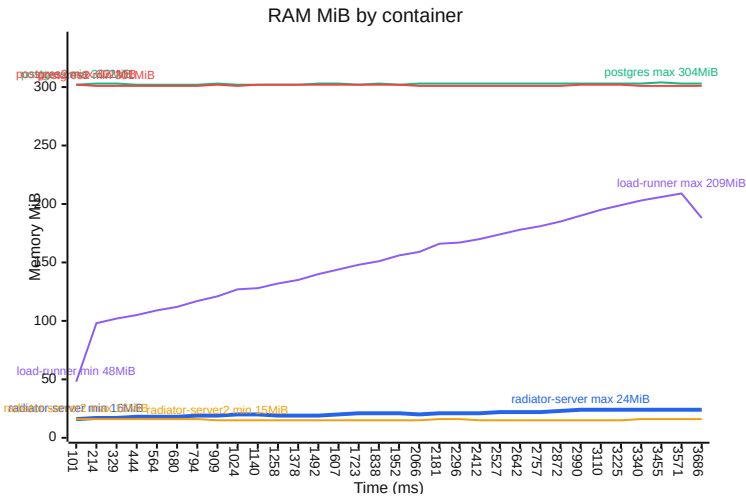
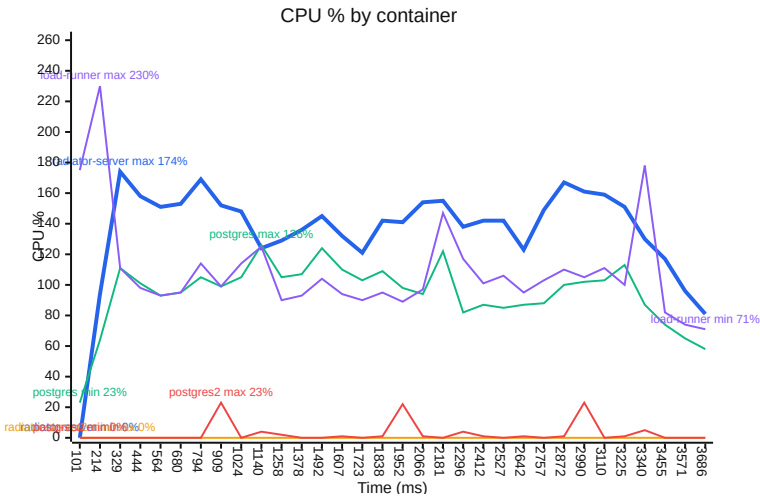


radiatordb_customer_db / 06_read

Test	Status / Run time	TPS	Max RAM	CPU p95	Notes	Size
radiatordb_customer_db / 06_read	PASS (3.8s)	5411 (> 4650)	24.7MiB	169.5%	Logs: 20006, Transactions: 20000	4CPU/8192MiB

Resource usage

Series	Container	Samples	Avg CPU	95% CPU	Max RAM	Size
1	radiator-server	32	135.4%	169.5%	24.7MiB	4CPU/8192MiB
2	radiator-server2	32	0%	0.5%	16.1MiB	4CPU/8192MiB
3	postgres	32	94.5%	124.5%	304.1MiB	4CPU/8192MiB
4	postgres2	32	2.8%	23.3%	302.7MiB	4CPU/8192MiB
5	load-runner	32	109.6%	178.1%	209.1MiB	Unlimited

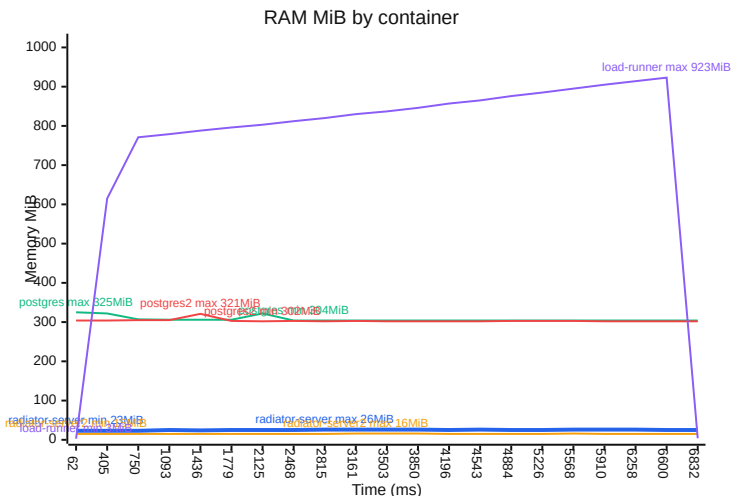
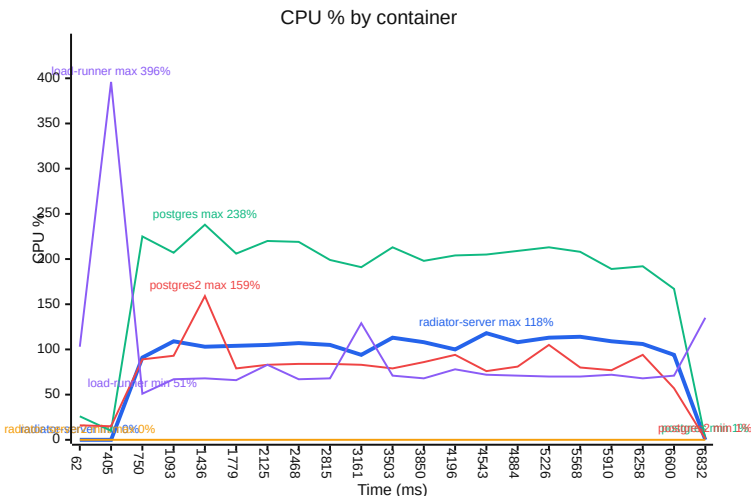


radiatordb_customer_db / 07_suspend

Test	Status / Run time	TPS	Max RAM	CPU p95	Notes	Size
radiatordb_customer_db / 07_suspend	PASS (6.9s)	2957 (> 1900)	26.8MiB	119.8%	Logs: 20012, Transactions: 20000	4CPU/8192MiB

Resource usage

Series	Container	Samples	Avg CPU	95% CPU	Max RAM	Size
1	radiator-server	60	95.8%	119.8%	26.8MiB	4CPU/8192MiB
2	radiator-server2	60	0%	0.5%	16.6MiB	4CPU/8192MiB
3	postgres	60	191.7%	238.4%	325.7MiB	4CPU/8192MiB
4	postgres2	60	81%	116.4%	321.6MiB	4CPU/8192MiB
5	load-runner	60	97.9%	359.8%	925.5MiB	Unlimited

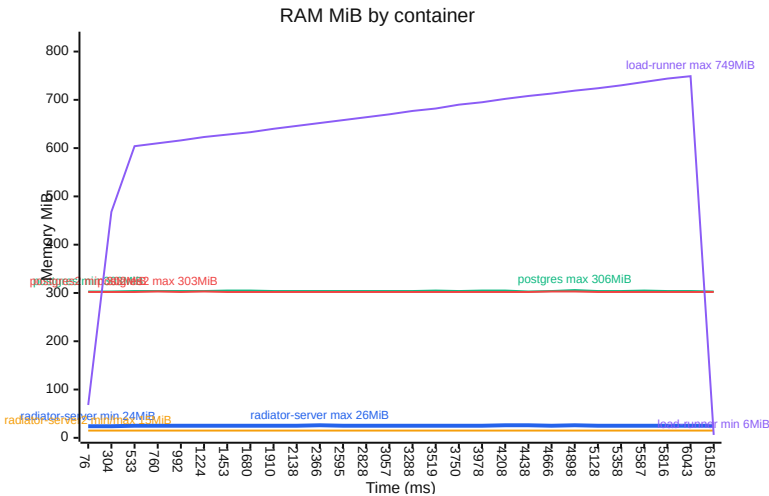
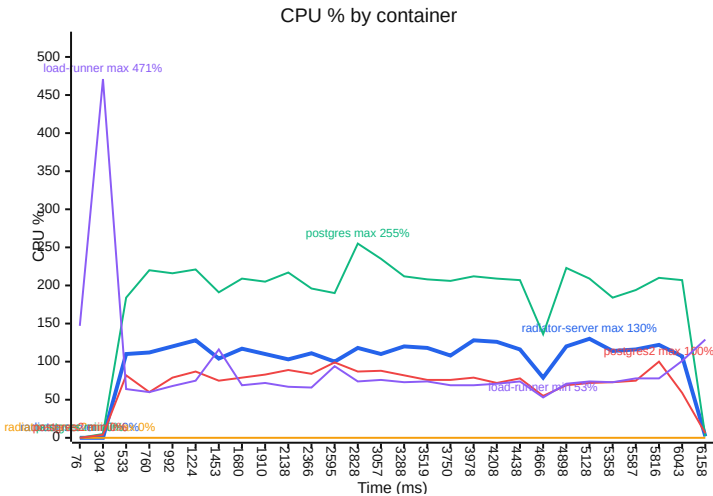


radiatordb_customer_db / 08_resume

Test	Status / Run time	TPS	Max RAM	CPU p95	Notes	Size
radiatordb_customer_db / 08_resume	PASS (6.2s)	3277 (> 2000)	26.4MiB	128.4%	Logs: 20012, Transactions: 20000	4CPU/8192MiB

Resource usage

Series	Container	Samples	Avg CPU	95% CPU	Max RAM	Size
1	radiator-server	54	104.2%	128.4%	26.4MiB	4CPU/8192MiB
2	radiator-server2	54	0%	0.6%	16.2MiB	4CPU/8192MiB
3	postgres	54	189%	235.7%	306MiB	4CPU/8192MiB
4	postgres2	54	71.8%	100.5%	305.1MiB	4CPU/8192MiB
5	load-runner	54	97.9%	343.9%	749.6MiB	Unlimited

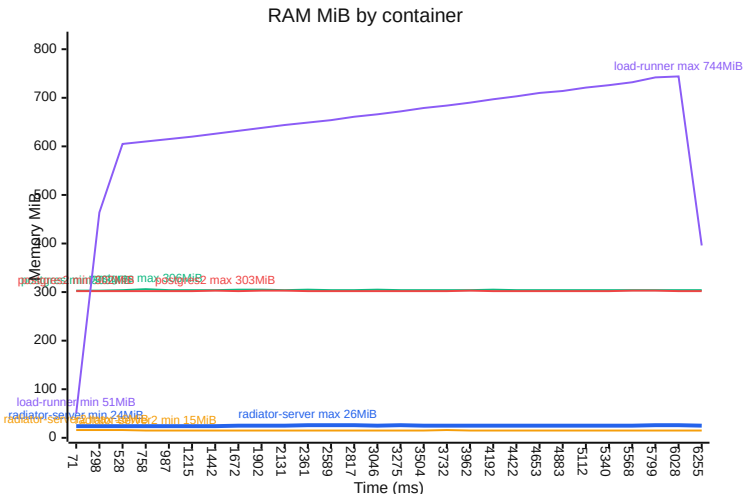
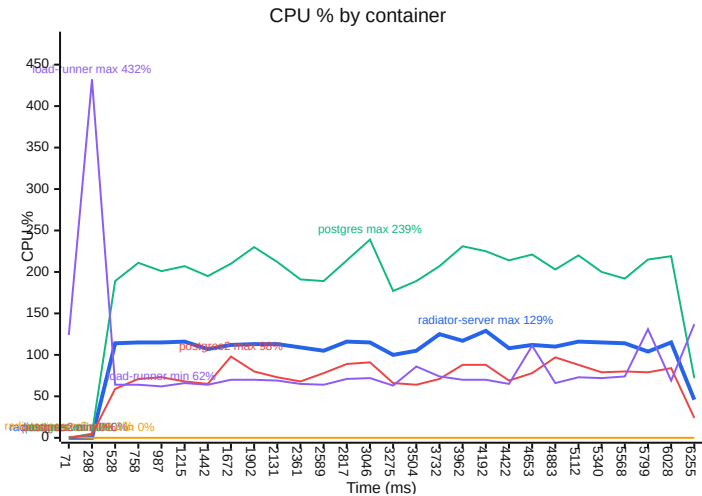


radiatorb_customer_db / 09_change_product

Test	Status / Run time	TPS	Max RAM	CPU p95	Notes	Size
radiatorb_customer_db / 09_change_product	PASS (6.3s)	3203 (> 2200)	26.3MiB	125.5%	Logs: 20013, Transactions: 20000	4CPU/8192MiB

Resource usage

Series	Container	Samples	Avg CPU	95% CPU	Max RAM	Size
1	radiator-server	55	104.4%	125.5%	26.3MiB	4CPU/8192MiB
2	radiator-server2	55	0%	0.7%	16.7MiB	4CPU/8192MiB
3	postgres	55	191.3%	231.6%	306.6MiB	4CPU/8192MiB
4	postgres2	55	73.5%	98.4%	303.8MiB	4CPU/8192MiB
5	load-runner	55	95%	343.9%	747.2MiB	Unlimited

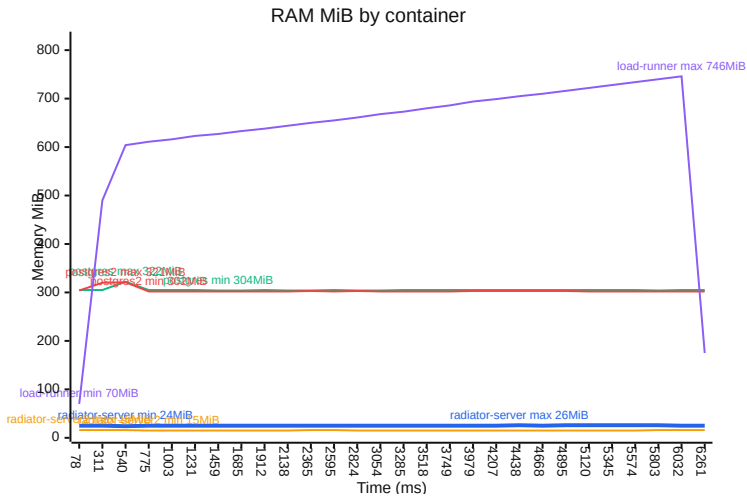
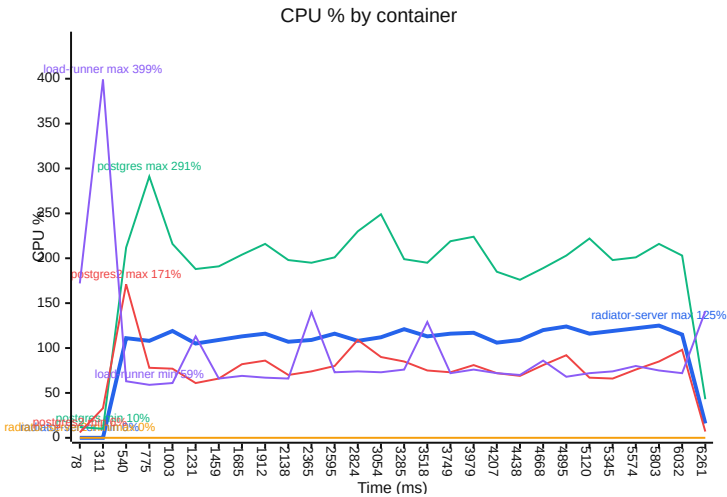


radiatordb_customer_db / 10_change_password

Test	Status / Run time	TPS	Max RAM	CPU p95	Notes	Size
radiatordb_customer_db / 10_change_password	PASS (6.3s)	3209 (> 2150)	26.6MiB	124.4%	Logs: 20014, Transactions: 20000	4CPU/8192MiB

Resource usage

Series	Container	Samples	Avg CPU	95% CPU	Max RAM	Size
1	radiator-server	55	104.2%	124.4%	26.6MiB	4CPU/8192MiB
2	radiator-server2	55	0%	0.6%	16.5MiB	4CPU/8192MiB
3	postgres	55	192.5%	246.5%	323.3MiB	4CPU/8192MiB
4	postgres2	55	75.8%	110.3%	321.2MiB	4CPU/8192MiB
5	load-runner	55	96.4%	317.7%	748.8MiB	Unlimited



radiatordb_customer_db / 11_delete

Test	Status / Run time	TPS	Max RAM	CPU p95	Notes	Size
radiatordb_customer_db / 11_delete	PASS (4.4s)	4643 (> 3300)	26.8MiB	119.3%	Logs: 20008, Transactions: 20000	4CPU/8192MiB

Resource usage

Series	Container	Samples	Avg CPU	95% CPU	Max RAM	Size
1	radiator-server	38	103.7%	119.3%	26.8MiB	4CPU/8192MiB
2	radiator-server2	38	0%	0.6%	16.5MiB	4CPU/8192MiB
3	postgres	38	176.3%	210.9%	306.5MiB	4CPU/8192MiB
4	postgres2	38	90.9%	120.8%	304MiB	4CPU/8192MiB
5	load-runner	38	114.8%	222.7%	323.9MiB	Unlimited

