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Rozproszona pamięć podręczna z wykorzystaniem Etcd

Zaimplementowane funkcje

```
from etcd_client import EtcdClient

class DistributedCache(object):
    def __init__(self, config_path, key_prefix, logger):
        self.etcd_client = EtcdClient(config_path, key_prefix, logger, 240) # reconnect every 4 minutes
        self.logger = logger
        self.key_prefix = key_prefix
        self.cache = {}

    def get(self, key: str, use_cache: bool = True) -> str:
        if use_cache and self.cache.get(key):
            return self.cache.get(key)

        data = self.etcd_client.get(str(self.key_prefix) + "/" + str(key))[0]
        if data is None:
            return data

        data_in_json = json.loads(data.decode("utf8"))
        self.cache[key] = data_in_json
        return data_in_json

    def put(self, key: str, value: str):
        put_key = self.key_prefix + "/" + key
        json_value = json.dumps(value)
        self.etcd_client.put(put_key, json_value)

    def delete(self, key: str):
        del_key = self.key_prefix + "/" + key
        self.etcd_client.delete(del_key)
```

Wyniki testu po ok. 14 minutach

Type	Name	# Requests	# Fails	Median (ms)	90%ile (ms)	Average (ms)	Min (ms)	Max (ms)	Average size (bytes)	Current RPS	Current Failures/s
DELETE	/config/load_tests/<key>	1094	0	210	870	367	38	2946	0	1.9	0
PUT	/config/load_tests/<key>	1133	0	210	870	354	36	2830	44	1.8	0
GET	/config/load_tests/<key>?use_cache=false	10062	0	180	700	306	34	3206	44	11.9	0
GET	/config/load_tests/<key>?use_cache=true	12120	0	7	10	8	2	699	44	14.4	0
Aggregated		24409	0	42	440	163	2	3206	42	30	0

Name	# reqs	# fails	Avg	Min	Max	Median	req/s	failures/s					
DELETE /config/load_tests/<key>	1094	0(0.00%)	367	37	2946	210	1.27	0.00					
PUT /config/load_tests/<key>	1133	0(0.00%)	353	35	2829	210	1.32	0.00					
GET /config/load_tests/<key>?use_cache=false	10062	0(0.00%)	306	33	3206	180	11.70	0.00					
GET /config/load_tests/<key>?use_cache=true	12120	0(0.00%)	8	1	698	7	14.09	0.00					
Aggregated	24409	0(0.00%)	163	1	3206	42	28.38	0.00					
Percentage of the requests completed within given times													
Type	Name	# reqs	50%	66%	75%	80%	90%	95%	98%	99%	99.9%	99.99%	100%
DELETE	/config/load_tests/<key>	1094	210	310	450	540	870	1200	1900	2100	2900	2900	2900
PUT	/config/load_tests/<key>	1133	210	320	420	530	870	1200	1700	1900	2800	2800	2800
GET	/config/load_tests/<key>?use_cache=false	10062	180	260	340	410	700	1000	1700	2000	2700	3100	3200
GET	/config/load_tests/<key>?use_cache=true	12120	7	7	8	9	10	11	13	14	300	690	700
None	Aggregated	24409	42	120	190	230	440	730	1200	1700	2500	3100	3200

IBM cloud

Statistics Charts Failures Exceptions Download Data											
Type	Name	# Requests	# Fails	Median (ms)	90%ile (ms)	Average (ms)	Min (ms)	Max (ms)	Average size (bytes)	Current RPS	Current Failures/s
DELETE	/config/performance_tests/-key>	203	0	97	330	161	33	1330	0	0.4	0
PUT	/config/performance_tests/-key>	243	0	98	350	168	35	2060	44	0.3	0
GET	/config/performance_tests/-key>?use_cache=false	2215	0	99	430	200	27	2535	44	12.4	0
GET	/config/performance_tests/-key>?use_cache=true	2306	0	74	320	145	21	1812	44	12.9	0
Aggregated		4967	0	88	370	171	21	2535	42	26	0

Komenda ibmcloud target

```
API endpoint:      https://cloud.ibm.com
Region:           eu-de
User:             kocinski@student.agh.edu.pl
Account:          Paweł Kocinski's Account (c1b34fe4a2b84cf3a06a425e34c5900b)

Resource group:    No resource group targeted, use 'ibmcloud target -g RESOURCE_
GROUP'
CF API endpoint:   https://api.eu-de.cf.cloud.ibm.com (API version: 2.147.0)
Org:              kocinski
Space:            test
(base) pawel@OMEN:~$
```

Komenda ibmcloud cf app distributed-cache:

```
name:              distributed-cache
requested state:    started
routes:            distributed-cache-delightful-crane-vx.eu-de.mybluemix.net
last uploaded:     Thu 28 May 15:45:40 CEST 2020
stack:             cflinuxfs3
buildpacks:        python

type:              web
instances:         4/4
memory usage:      256M

  state   since                cpu    memory              disk             details
#0  running 2020-05-28T13:45:57Z  0.2%  36.9M of 256M  255.7M of 1G
#1  running 2020-05-28T13:46:07Z  0.3%  37.6M of 256M  255.7M of 1G
#2  running 2020-05-28T13:46:11Z  0.3%  37M of 256M    255.7M of 1G
#3  running 2020-05-28T13:46:00Z  0.3%  36.9M of 256M  255.7M of 1G
```

Komenda cf logs distributed-cache --recent | head -n 20

```
2020-05-28T15:57:07.16+0200 [RTR/0] OUT distributed-cache-delightful-crane-vx.eu-de.mybluemix.net - [2020-05-28T13:57:07.087094938Z] "GET /config/performance_tests/GfkgQFqJcLEIPrpxWtdyEvSzmYfSEpxKlWlVcJnTWOdmudSjLPYEtYcDtjGjnp?use_cache=false HTTP/1.1" 200 0 44 "-" "python-requests/2.23.0" "10.85.78.50:31533" "149.81.69.217:61326" x_forwarded_for:"149.81.126.108, 10.85.78.50" x_forwarded_proto:"http" vcap_request_id:"5b93a082-5521-4fb0-645a-c319d61cc3ef" response_time:0.079648 gorouter_time:0.001108 app_id:"028d5c7b-99ac-4223-bba0-5db01d23b7d7" app_index:"0" x_global_transaction_id:"78f8097c5ecfc3337e29edd" true_client_ip:"- " x_b3_traceid:"b28cc4d6f7cf4307" x_b3_spanid:"b28cc4d6f7cf4307" x_b3_parentspanid:"- " b3:"b28cc4d6f7cf4307-b28cc4d6f7cf4307"
2020-05-28T15:57:07.16+0200 [RTR/0] OUT
2020-05-28T15:57:07.17+0200 [RTR/1] OUT distributed-cache-delightful-crane-vx.eu-de.mybluemix.net - [2020-05-28T13:57:07.059918639Z] "GET /config/performance_tests/aXaFskkrMXatTuyRiTbWdHdJmVbIcwiDQWjwEROFGWzWxFdOMoVfAMEoORNQWEKb?use_cache=false HTTP/1.1" 200 0 44 "-" "python-requests/2.23.0" "10.85.78.52:19925" "161.156.72.103:61402" x_forwarded_for:"149.81.126.108, 10.85.78.52" x_forwarded_proto:"http" vcap_request_id:"0fb8f08d-6e3c-43f3-6472-16008e9ed4d0" response_time:0.117133 gorouter_time:0.000341 app_id:"028d5c7b-99ac-4223-bba0-5db01d23b7d7" app_index:"2" x_global_transaction_id:"aad3dade5ecfc33399bf6a7" true_client_ip:"- " x_b3_traceid:"9cfb5aa98ab3c8ee" x_b3_spanid:"9cfb5aa98ab3c8ee" x_b3_parentspanid:"- " b3:"9cfb5aa98ab3c8ee-9cfb5aa98ab3c8ee"
2020-05-28T15:57:07.17+0200 [RTR/1] OUT
2020-05-28T15:57:07.17+0200 [APP/PROC/WEB/1] ERR 10.247.30.63 - - [28/May/2020 13:57:07] "GET /config/performance_tests/dybQTLTLZLSfydNbeOCdXhmbLzeJvWjyUPoGvJJqRwWQDHGpBANLLTcteLEZHodm?use_cache=true HTTP/1.1" 200 -
2020-05-28T15:57:07.18+0200 [RTR/3] OUT distributed-cache-delightful-crane-vx.eu-de.mybluemix.net - [2020-05-28T13:57:07.142712818Z] "GET /config/performance_tests/dybQTLTLZLSfydNbeOCdXhmbLzeJvWjyUPoGvJJqRwWQDHGpBANLLTcteLEZHodm?use_cache=true HTTP/1.1" 200 0 44 "-" "python-requests/2.23.0" "10.85.78.51:39873" "169.50.40.130:61254" x_forwarded_for:"149.81.126.108, 10.85.78.51" x_forwarded_proto:"http" vcap_request_id:"a613179d-5904-43fc-5bfc-35d913a62fa8" response_time:0.041260 gorouter_time:0.000880 app_id:"028d5c7b-99ac-4223-bba0-5db01d23b7d7" app_index:"1" x_global_transaction_id:"48cd8a595ecfc3339b47957" true_client_ip:"- " x_b3_traceid:"dae5efc75ebc77cf" x_b3_spanid:"dae5efc75ebc77cf" x_b3_parentspanid:"- " b3:"dae5efc75ebc77cf-dae5efc75ebc77cf"
2020-05-28T15:57:07.18+0200 [RTR/3] OUT
2020-05-28T15:57:07.25+0200 [APP/PROC/WEB/3] OUT <etcd_client.EtcdClient object at 0x7f7d3457ee48> /radoslaw-kopec//performance_tests/VGwntIXAAMfRUxAFnKamoGDPEEEytjdDyHLZjyHnlsasGZZQqXKowBNnnyFtaxAn?use_cache=false HTTP/1.1" 200 -
2020-05-28T15:57:07.26+0200 [RTR/0] OUT distributed-cache-delightful-crane-vx.eu-de.mybluemix.net - [2020-05-28T13:57:07.240001099Z] "GET /config/performance_tests/VGwntIXAAMfRUxAFnKamoGDPEEEytjdDyHLZjyHnlsasGZZQqXKowBNnnyFtaxAn?use_cache=false HTTP/1.1" 200 0 44 "-" "python-requests/2.23.0" "10.85.78.51:58826" "149.81.69.196:61330" x_forwarded_for:"149.81.126.108, 10.85.78.51" x_forwarded_proto:"http" vcap_request_id:"354c6b6a-73c9-4e0d-7a5f-6d5d78ccaa47" response_time:0.026701 gorouter_time:0.002083 app_id:"028d5c7b-99ac-4223-bba0-5db01d23b7d7" app_index:"3" x_global_transaction_id:"48cd8a595ecfc333809e8ed" true_client_ip:"- " x_b3_traceid:"de1dad3b791b7f75" x_b3_spanid:"de1dad3b791b7f75" x_b3_parentspanid:"- " b3:"de1dad3b791b7f75-de1dad3b791b7f75"
2020-05-28T15:57:07.26+0200 [RTR/0] OUT
2020-05-28T15:57:07.26+0200 [APP/PROC/WEB/0] ERR 10.245.197.31 - - [28/May/2020 13:57:07] "GET /config/performance_test/ZAxzzLoMHZDtZXBYMYqRrIngoYNyvvqEZWHALPPGUFKdzypyzuHrfJtUPJwixzs?use_cache=true HTTP/1.1" 200 -
2020-05-28T15:57:07.26+0200 [APP/PROC/WEB/2] OUT <etcd_client.EtcdClient object at 0x7fba1a78d240> /radoslaw-kopec//performance_tests/BPwFVvvaTPEOUzrVZuibrOTotWDDYhgLUkilembmoANDjwhICjqMcIyPerPtsKZS
2020-05-28T15:57:07.27+0200 [APP/PROC/WEB/3] ERR 10.245.22.254 - - [28/May/2020 13:57:07] "GET /config/performance_test/VGwntIXAAMfRUxAFnKamoGDPEEEytjdDyHLZjyHnlsasGZZQqXKowBNnnyFtaxAn?use_cache=false HTTP/1.1" 200 -
2020-05-28T15:57:07.27+0200 [RTR/2] OUT distributed-cache-delightful-crane-vx.eu-de.mybluemix.net - [2020-05-28T13:57:07.246234516Z] "GET /config/performance_tests/ZAxzzLoMHZDtZXBYMYqRrIngoYNyvvqEZWHALPPGUFKdzypyzuHrfJtUPJwixzs?use_cache=true HTTP/1.1" 200 0 44 "-" "python-requests/2.23.0" "10.85.78.52:15881" "149.81.69.217:61326" x_forwarded_for:"149.81.126.108, 10.85.78.52" x_forwarded_proto:"http" vcap_request_id:"487b5b2a-ceea-4c57-7cfb-a98d939e6797" response_time:0.031214 gorouter_time:0.000665 app_id:"028d5c7b-99ac-4223-bba0-5db01d23b7d7" app_index:"0" x_global_transaction_id:"aad3dade5ecfc333994b757" true_client_ip:"- " x_b3_traceid:"bf4b66c5e08a84b7" x_b3_spanid:"bf4b66c5e08a84b7" x_b3_parentspanid:"- " b3:"bf4b66c5e08a84b7-bf4b66c5e08a84b7"
```