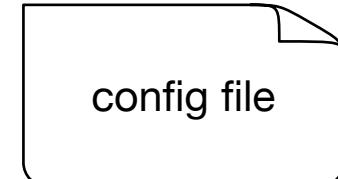


CONSUL
TEMPLATE



BOM (Bill Of Materials)



Helm Chart



Helm



us-west-1

Physical or Virtual Data Center



us-east-2

Physical or Virtual Data Center



Kubernetes



QA
Cluster

Kubernetes



Prod
Cluster

Kubernetes

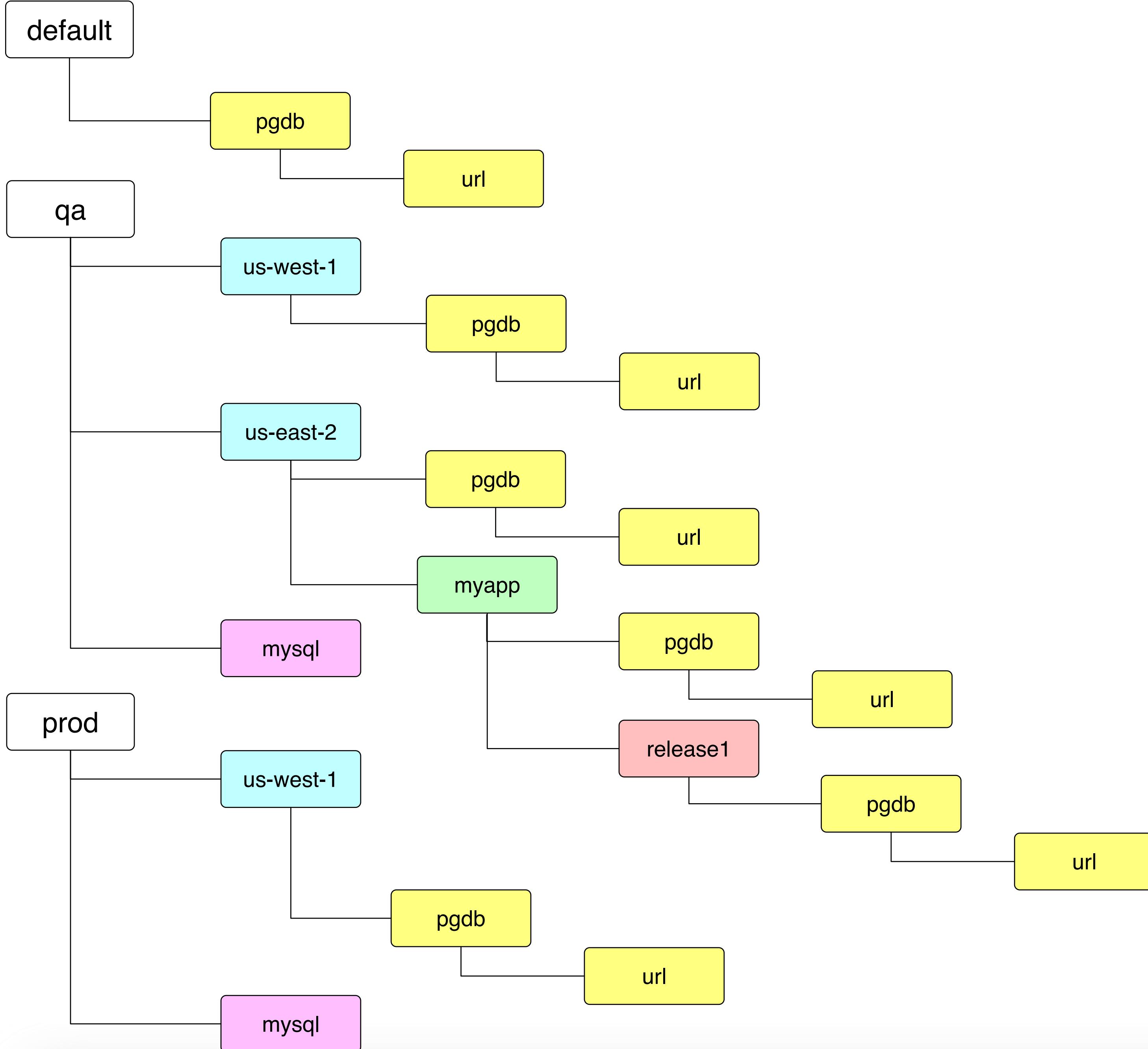


Pre-prod
Cluster

Kubernetes



Prod
Cluster



```

3  consul kv put default/count 1
4  consul kv put default/pgdb/url "postgresql://localhost/db"
5  consul kv put qa/us-west-1/pgdb/url "postgresql://us-west-1/db-qa"
6  consul kv put prod/us-west-1/pgdb/url "postgresql://us-west-1/db-prod"
7  consul kv put us-east-2/pgdb/url "postgresql://east/db"
8  consul kv put qa/us-east-2/myapp/pgdb/url "postgresql://east-myapp/db"
9  consul kv put qa/us-east-2/myapp/release1/pgdb/url "postgresql://east-myapp/db-r1"
10  consul kv put myapp/pgdb/url "postgresql://localhost/mydb"
11  consul kv put default/myapp/release1/pgdb/url "postgresql://localhost/mydb-r1"
12  consul kv put qa/mysql @mysql1.json
13  consul kv put prod/mysql @mysql2.json

```

```
2 got count [{{ key "default/count" }}], expected <1> - direct key lookup
3 {{ $location := or (env "CLUSTER_LOCATION" ) "us-west-1" }}
4 {{ $app := or (env "APP" ) "myapp"}}
5 {{ $release := or (env "RELEASE" ) "release1"}}
6 {{ $env := or (env "ENVIRONMENT" ) "qa"}}
7
8 {{$location}}_{{$env}}={{plugin "hiera-ctp" "pgdb/url" $location $env}}
9
10 {{$app}}_{{$location}}_{{$env }}={{plugin "hiera-ctp" "pgdb/url" $app $location $env}}
11
12 {{$release}}_{{$app}}_{{$location}}_{{$env }}={{plugin "hiera-ctp" "pgdb/url" $release $app $location $env}}
13
14 Getting JSON value
15
16 {{with $d := plugin "hiera-ctp" "mysql" $release $app $location $env | parseJSON}}
17 url = {{$d.url}}
18 user = {{$d.user}}
19 {{end}}
```

```
19 export CLUSTER_LOCATION=us-west-1
20 export RELEASE=release1
21 runTemplates
22 export CLUSTER_LOCATION=us-east-2
23 runTemplates
24 export RELEASE=release2
25 runTemplates
26 export RELEASE=release2
27 runTemplates
28 export ENVIRONMENT=prod
29 runTemplates
```

got count [1], expected <1> - direct key lookup [1], expected <1> - direct key lookup

us-east-2_qa=postgresql://localhost/db	6 7	6 7
myapp_us-east-2_qa=postgresql://east-myapp/db	8 9	8 9
release2_myapp_us-east-2_qa=postgresql://east-myapp/db	10 11	10 11
Getting JSON value	12 13 14 15 16 17 18 19 20	12 13 14 15 16 17 18 19 20
url = jdbc:mysql://mysql1:3306/users user = user1	17 18 19 20	url = jdbc:mysql://mysql1:3306/users user = user1

```
#!/usr/bin/env bash

set -e

mvn install
cat stub.sh target/hiera-ctp-0.1-SNAPSHOT-spring-boot.jar > target/hiera-ctp
chmod u+x target/hiera-ctp
```

```
1 #!/bin/sh
2 https://coderwall.com/p/ssuaxa/how-to-make-a-jar-file-linux-executable
3 MYSELF=`which "$0" 2>/dev/null`
4 [ $? -gt 0 -a -f "$0" ] && MYSELF="./$0"
5 java=java
6 if test -n "$JAVA_HOME"; then
7     java="$JAVA_HOME/bin/java"
8 fi
9 exec "$java" $java_args -jar $MYSELF "$@"
10 exit 1
```

Running hiera-ctp-java/target/hiera-ctp

```
real    0m2.865s  
user    0m4.772s  
sys     0m0.390s
```

Running /Users/kgignatyev/.cargo/bin/hiera-ctp

```
real    0m0.098s  
user    0m0.047s  
sys     0m0.036s
```

Running /Users/kgignatyev/go/bin/hiera-ctp

```
real    0m0.104s  
user    0m0.051s  
sys     0m0.039s
```

congratulations, rendered templates are the same

congratulations, rendered go templates are the same

Running hiera-ctp-java/target/hiera-ctp

```
real    0m2.900s  
user    0m4.755s  
sys     0m0.383s
```

Running /Users/kgignatyev/.cargo/bin/hiera-ctp

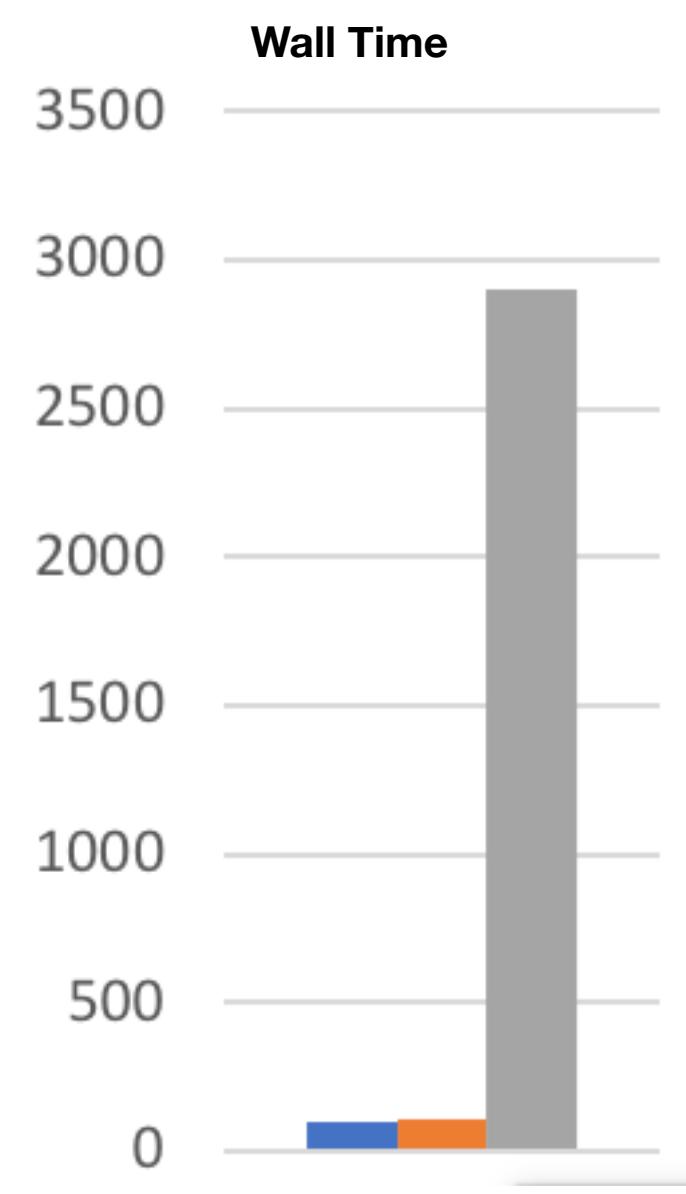
```
real    0m0.098s  
user    0m0.047s  
sys     0m0.034s
```

Running /Users/kgignatyev/go/bin/hiera-ctp

```
real    0m0.104s  
user    0m0.051s  
sys     0m0.039s
```

congratulations, rendered templates are the same

congratulations, rendered go templates are the same



Java uses 100 times more CPU

```
kgignatyev$ ls -alh hiera-ctp-java/target/hiera-ctp
```

```
staff  3.2M May 16 21:49 hiera-ctp-java/target/hiera-ctp  
hiera-ctp
```

```
-ctpKonstantins-iMac:hiera-ctp kgignatyev$ ls -alh $HOME/.cargo/bin/hiera-ctp
```

```
staff  5.0M May 16 21:49 /Users/kgignatyev/.cargo/bin/hiera-ctp
```

```
-ctpKonstantins-iMac:hiera-ctp kgignatyev$ ls -alh $HOME/go/bin/hiera-ctp
```

```
staff  6.9M May 16 21:49 /Users/kgignatyev/go/bin/hiera-ctp
```

```

58 ► fn main() {
59     let args: Vec<String> = env::args().collect();
60     let (left:&[String], path_parts:&[String]) = args.split_at(mid:2);
61     let key:&String = left.get(index:1).unwrap();
62     let mut res:Option<String> = find_key_value(&key, &path_parts);
63     match res {
64         Some(data:String) => {
65             res = Some(data);
66         }
67         None => {
68             let default_path: String = format!("default/{}",key );
69             let default_res:Result<String,CustomError> = get_key_value(&default_path);
70             res = match default_res {
71                 Ok(s:String) => Some(s),
72                 Err(_)=> None
73             }
74         }
75     }
76
77     match res {
78         Some(v:String)=> println!("{}" , v),
79         None=>println!("null")
80     }

```



```

13 fn get_key_value(path:&String) -> Result<String, CustomError> {
14     let url: String = format!("http://localhost:8500/v1/kv/{}", path);
15     //    println!("trying:{}", url);
16
17     let mut res:Response = reqwest::get(&url)?;
18     let mut body: String = String::new();
19     res.read_to_string(buf:&mut body)?;
20     if res.status() == 200 {
21         let r: Result<Value, serde_json::Error> = serde_json::from_str(s:&body);
22         match r {
23             Ok(v:Value) => {
24                 let b64v:&str = v[0]["Value"].as_str().unwrap();
25                 let vd:Vec<u8> = decode(input:b64v).unwrap();
26                 let s:String = String::from_utf8(vec:vd).unwrap();
27                 Ok(s)
28             }
29             Err(_) => Err(CustomError::Info("no value".to_string()))
30         }
31     } else {
32         Err(CustomError::Info("no value".to_string()))
33     }
34 }
```

```

74 @ ...
75     public static Result find_key_value(String key, String[] path_parts) {
76         var parts = Arrays.asList(path_parts);
77         Collections.reverse(parts);
78         String res = null;
79         for (int x = 0; x < parts.size(); x++) {
80             if (res == null) {
81                 StringBuilder sb = new StringBuilder();
82                 for (int i = 0; i < parts.size() - x; i++) {
83                     if (sb.length() != 0) {
84                         sb.append("/");
85                     }
86                     sb.append(parts.get(i));
87                 }
88                 sb.append("/").append(key);
89                 String path = sb.toString();
90                 res = get_key_value_or_null(path);
91             }
92         }
93         // lets try to find a default
94         res = get_key_value_or_null(path: "default/" + key);
95     }
96     return new Result(res, responseCode: 200);
97 }
98
99
100 public static void main(String[] args) {
101     var path = Arrays.copyOfRange(args, from: 1, args.length);
102     var r = find_key_value(args[0], path);
103     var p = String.join(delimiter: ",", args);
104     System.out.println(r.res);

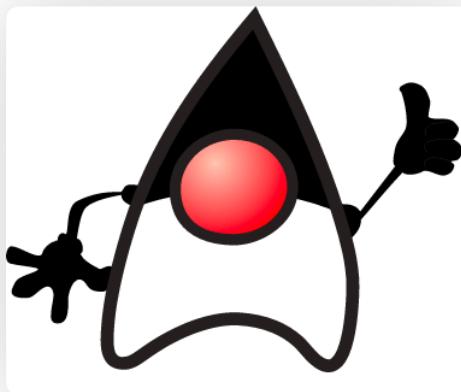
```



```

100 public static void main(String[] args) {
101     var path = Arrays.copyOfRange(args, from: 1, args.length);
102     var r = find_key_value(args[0], path);
103     var p = String.join(delimiter: ",", args);
104     System.out.println(r.res);

```



```

56 // this works faster than method with fluent HTTP that tests for return code before at
57 @ ...
58     public static Result get_key_value(String path) {
59         try {
60             var tree = om.readTree(new URL(spec: "http://localhost:8500/v1/kv/" + path));
61             var b64v = tree.get(0).get("Value").asText();
62             String val = new String(Base64.getDecoder().decode(b64v));
63             return new Result(val, responseCode: 200);
64         } catch (IOException e) {
65             // e.printStackTrace();
66         }
67     }
68 }

```

Really bad piece of code!

```

29 func get_key_value(key string, path []string) (string, error) {
30     prefixPath := strings.Join(reverse(path), sep: "/")
31     resp, err := http.Get("http://localhost:8500/v1/kv/" + prefixPath + "/" + key)
32     var js []KeyData
33     if err == nil {
34         defer resp.Body.Close()
35         if resp.StatusCode == http.StatusOK {
36             bodyBytes, err := ioutil.ReadAll(resp.Body)
37             if err == nil {
38                 unmarshalErr := json.Unmarshal(bodyBytes, &js)
39                 if unmarshalErr != nil {
40                     return "", unmarshalErr
41                 }
42                 decoded, err := base64.StdEncoding.DecodeString(js[0].Value)
43                 return string(decoded), err
44             } else { return "", err }
45         } else {
46             return "", errors.New(fmt.Sprintf("status code was %v", resp.StatusCode))
47         }
48     }
49     return "", err
50 }
51 func find_key_value(key string, path []string) (string, error) {
52     idx := 0
53     var v = ""
54     var err error
55     for idx < len(path) {
56         p := path[idx:]
57         v, err = get_key_value(key, p)
58         if err == nil {
59             return v, nil
60         }
61         idx = idx+1
62     }
63     return v, errors.New(text: "not found")
64 }
65 func main() {
66     key, path := os.Args[1], os.Args[2:]
67     v, err := find_key_value(key, path)
68     if err != nil {
69         v, err = find_key_value(key, []string{"default"})
70     }
71     if err != nil {
72         v = "null"
73     }
74     fmt.Println(v)
75     //println(v) //prints to stdERROR

```

GOLANG



GraalVM™

Run Programs Faster Anywhere

Running hiera-ctp-jar/target/hiera-ctp

```
real    0m3.115s  
user    0m5.262s  
sys     0m0.494s
```

Running /Users/kgignatyev/.cargo/bin/hiera-ctp

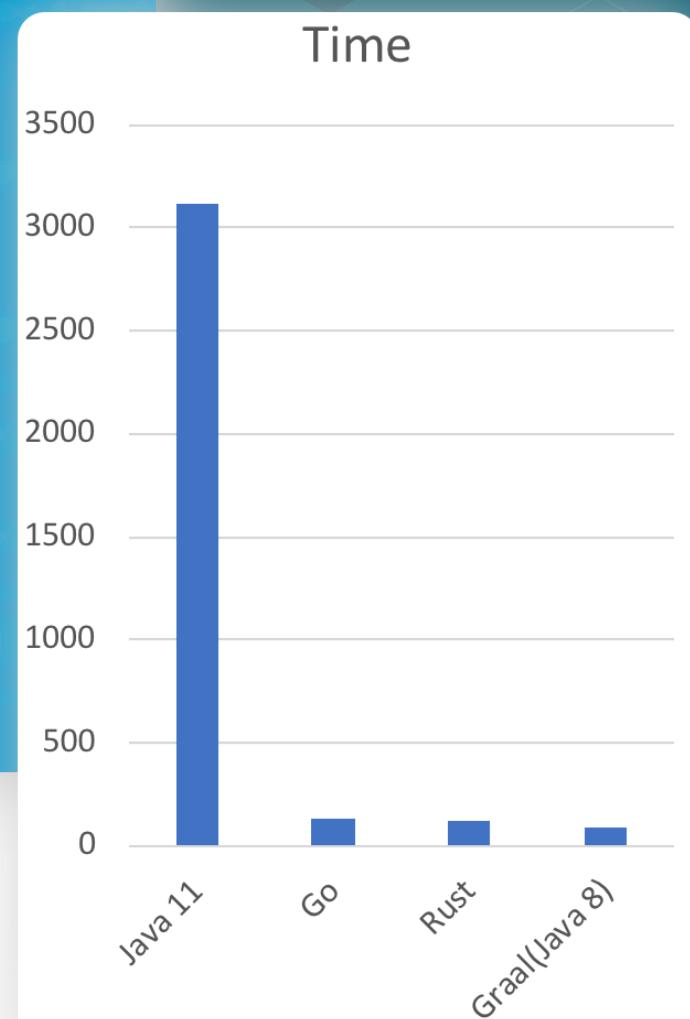
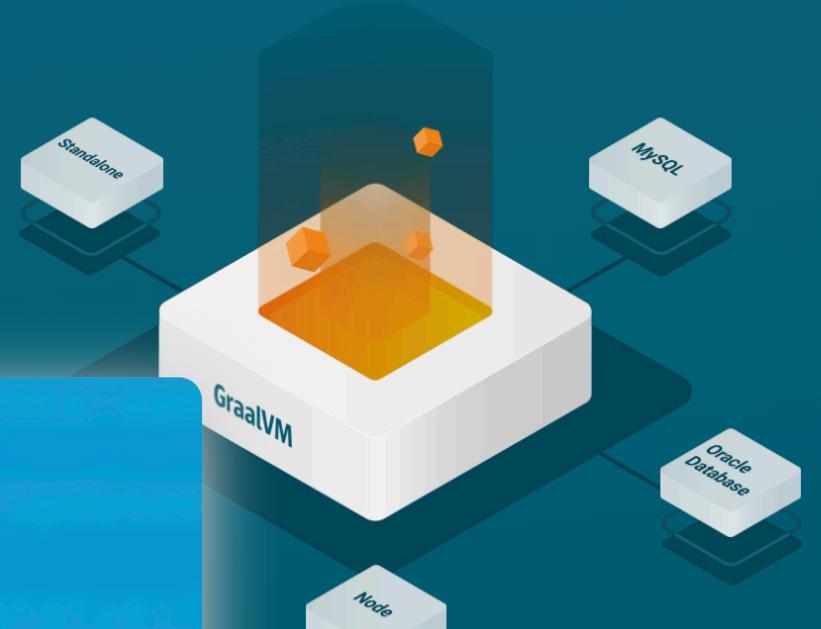
```
real    0m0.125s  
user    0m0.058s  
sys     0m0.043s
```

Running /Users/kgignatyev/go/bin/hiera-ctp

```
real    0m0.129s  
user    0m0.062s  
sys     0m0.048s
```

Running hiera-ctp-graal-native/hiera-ctp

```
real    0m0.093s  
user    0m0.036s  
sys     0m0.032s
```



3.2M May 20 12:00 hiera-ctp-jar/target/hiera-ctp

4.9M May 20 12:00 /Users/kgignatyev/.cargo/bin/hiera-ctp

6.9M May 17 17:07 /Users/kgignatyev/go/bin/hiera-ctp

13M May 20 11:52 hiera-ctp-graal-native/hiera-ctp

```

1 #!/usr/bin/env bash
2
3 set -e
4
5 mvn clean install
6 native-image --report-unsupported-elements-at-runtime \
7   --no-fallback \
8   --enable-http \
9   -jar target/hiera-ctp-graal-native-0.1-SNAPSHOT-jar-with-dependencies.jar hiera-ctp

```

```

36 @    public static Result get_key_value(String path) {
37     try { //works faster than testing for return code before attempting to parse
38         JsonNode tree = om.readTree(new URL(spec: "http://localhost:8500/v1/kv/" + path));
39         String b64v = tree.get(0).get("Value").asText();
40         String val = new String(Base64.getDecoder().decode(b64v));
41         return new Result(val, responseCode: 200);
42     } catch (IOException e) {
43         //e.printStackTrace();
44     }
45     return new Result(res: "42", responseCode: -1);
46 }
47
48 @    public static String get_key_value_or_null(String path) {
49     Result r = get_key_value(path);
50     return r.hasError() ? null : r.res;
51 }
52
53 @    public static Result find_key_value(String key, String[] path_parts) {
54     List<String> parts = Arrays.asList(path_parts);
55     Collections.reverse(parts);
56     String res = null;
57     for (int x = 0; x < parts.size(); x++) {
58         if (res == null) {
59             StringBuilder sb = new StringBuilder();
60             for (int i = 0; i < parts.size() - x; i++) {
61                 if (sb.length() != 0) {
62                     sb.append("/");
63                 }
64                 sb.append(parts.get(i));
65             }
66             sb.append("/").append(key);
67             String path = sb.toString();
68             res = get_key_value_or_null(path);
69         }
70     }
71     if (res == null) { // lets try to find a default
72         res = get_key_value_or_null(path: "default/" + key);
73     }
74     return new Result(res, responseCode: 200);
75 }

```



```

23     fun findKeyValue(key: String, pathComponents: Array<String>): String {
24         val client = HttpClient(CIO)
25         pathComponents.reverse()
26         var result: String? = null
27         runBlocking { this: CoroutineScope
28             for (lastIndex in (pathComponents.size-1) ≥ downTo ≥ 0) {
29                 val pathBuilder = StringBuilder()
30                 (0 .. ≤ lastIndex).forEach { componentIndex ->
31                     if (pathBuilder.isNotEmpty()) {
32                         pathBuilder.append('/')
33                     }
34                     pathBuilder.append(pathComponents[componentIndex])
35                 }
36                 pathBuilder.append('/').append(key)
37                 val r = get_key_value(pathBuilder.toString(), client)
38                 if (!r.hasError()) {
39                     result = r.res
40                     return@runBlocking
41                 }
42             }
43             if( result == null){
44                 val defaultV = get_key_value(path: "default/$key", client)
45                 result = defaultV.res
46             }
47         }
48         client.close()
49         return result ?: ""
50     }

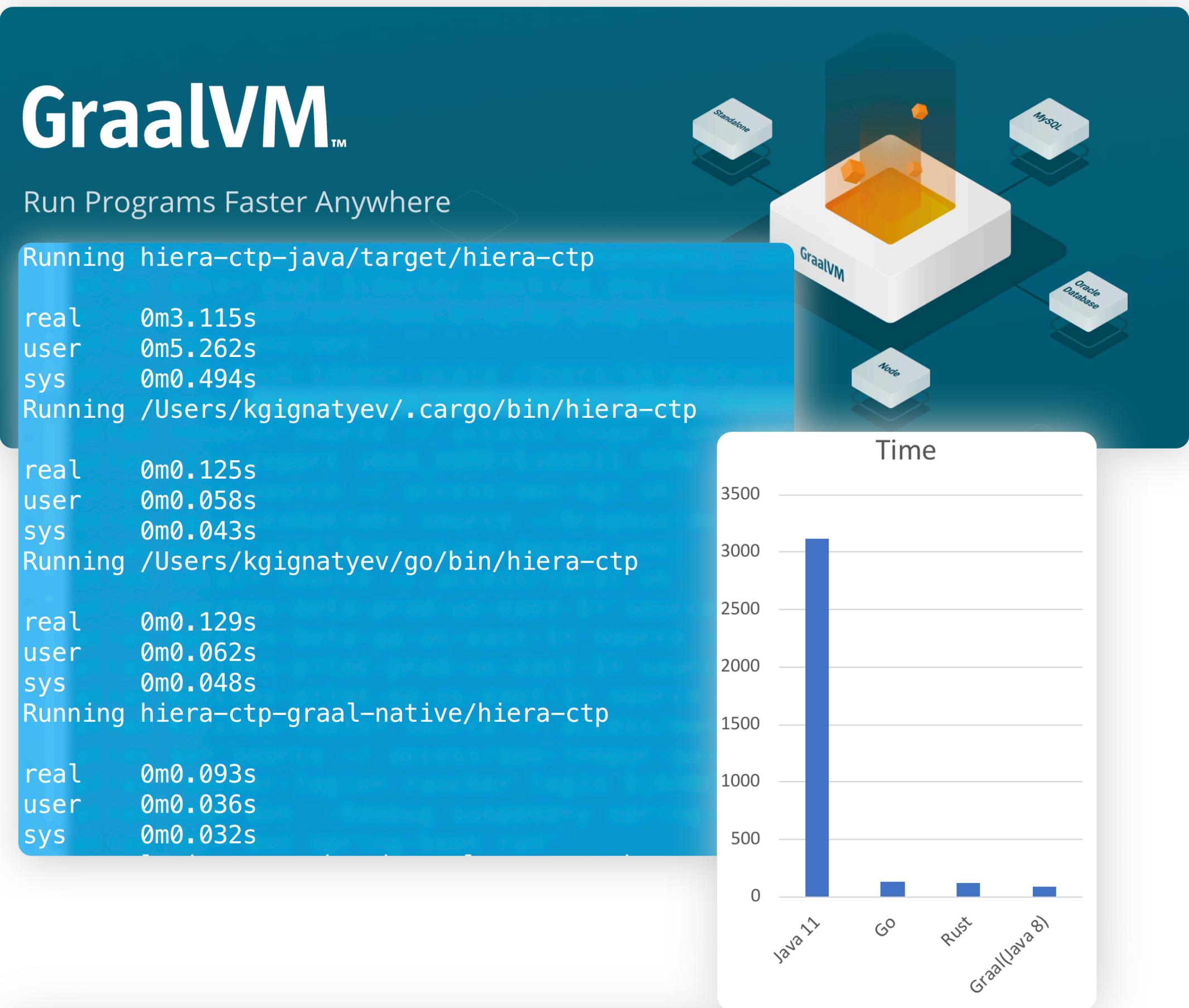
51     suspend fun get_key_value(path: String, client: HttpClient): Result {
52         val urlString = "http://localhost:8500/v1/kv/$path"
53         val resp = client.get(urlString)

54         return if (resp.status == HttpStatusCode.OK) {
55             val responseText = resp.bodyAsText()
56             val jsonE = Json.parseToJsonElement( responseText )
57             val encodedVal = jsonE.jsonArray[0].jsonObject["Value"]!!.jsonPrimitive.content
58             val decodedVal = Base64.decode( encodedVal ).decodeToString()
59             Result(decodedVal, responseCode: 200)
60         } else {
61             Result(res: "42", responseCode: -1)
62         }
63     }
64 }
65 }
66 }
67 }
68 }

```



May 2019 MacBook Pro Intel



```
3.2M May 20 12:00 hiera-ctp-java/target/hiera-ctp
4.9M May 20 12:00 /Users/kgignatyev/.cargo/bin/hiera-ctp
6.9M May 17 17:07 /Users/kgignatyev/go/bin/hiera-ctp
13M May 20 11:52 hiera-ctp-graal-native/hiera-ctp
```

March 2024 MacBook M1

