

به نام خدا

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تنظیمات فایل yml :

```
scrape_configs:
  # The job name is added as a label `job=<job_name>` to
  - job_name: "prometheus"

    # metrics_path defaults to '/metrics'
    # scheme defaults to 'http'.

    static_configs:
      - targets: ["localhost:9090"]

  - job_name: "RJ"

    static_configs:
      - targets: ["localhost:8080"]
```

قطعه کد agent :

```
agent.py
1  # agent program to communicate with the server for get and send data to server by json and socket
2
3  # import libraries
4  import socket
5  import json
6  import time
7  import random
8  import psutil
9
10
11 class Agent:
12     def __init__(self, HOST="127.0.0.1", PORT=8001):
13         self.HOST = HOST
14         self.PORT = PORT
15         self.S = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
16
17     def connect(self):
18         self.S.connect((self.HOST, self.PORT))
19
20     def get_sys_data(self):
21         data = {
22             "cpu_percent": psutil.cpu_percent(),
23             "mem_percent": psutil.virtual_memory().percent
24         }
25         print(data)
26         return data
27
28     def send(self):
29         self.S.send(json.dumps(self.get_sys_data()).encode('ascii'))
30         print("Sent")
31
32
33 agent = Agent()
34
35 until_connected = False
36 while not until_connected:
37     try:
38         agent.connect()
39         until_connected = True
40         print("Connected to the server!")
41     except ConnectionRefusedError:
42         print("Can not connect to the server!")
43         yes = input("Do you want to try again? [y/n]: ")
44         if yes != "y":
45             print("Agent program closed!")
46             quit()
47
48 try:
49     while True:
50         try:
51             agent.send()
52         except :
53             print("Can not send data to the server!")
54             time.sleep(1)
55 except:
56     print("Problem in sending data!")
```

قطعه کد server:

```
1  """
2  server program to communicate with the multiple agents for get and send data to agent by json and socket
3  server using prometheus
4  """
5
6  # import libraries
7  import socket
8  from prometheus_client import start_http_server, Gauge
9  import threading
10 import threading
11 import time
12 import json
13
14 class Server:
15     def __init__(self, HOST="127.0.0.1", PORT=8081):
16         start_http_server(8080)
17         self.HOST = HOST
18         self.PORT = PORT
19         self.LOCK = threading.Lock()
20         self.CPU = Gauge("cpu usage", "Usage of CPU", ["agent"])
21         self.VMP = Gauge("virtual_memory_percent", "virtual memory percent", ["agent"])
22         self.agents = dict()
23         self.num_agents = 0
24         self.S = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
25         self.S.bind((self.HOST, self.PORT))
26
27     def send(self, message, agent_id):
28         data = json.loads(message)
29         agent_name = f"agent:{agent_id}"
30         print(data)
31         self.CPU.labels(agent=agent_name).set(data['cpu_percent'])
32         self.VMP.labels(agent=agent_name).set(data['mem_percent'])
33
34     def up_server(self):
35         self.S.listen(10)
36         print("Server is listening...")
37         while True:
38             c, addr = self.S.accept()
39             self.num_agents += 1
40             self.agents[c] = self.num_agents
41             self.LOCK.acquire()
42             print(f"Connected to agent {self.num_agents} with {addr}")
43             self.LOCK.release()
44             _thread.start_new_thread(self.handle_agent, (c,))
45
46     def handle_agent(self, c):
47         agent_id = self.agents[c]
48         try:
49             while True:
50                 data = c.recv(1024)
51                 self.send(data, agent_id)
52         except Exception as e:
53             print(e)
54             del self.agents[c]
55             self.LOCK.acquire()
56             print(f"Agent {agent_id} is disconnected from server")
57             print(f"Total agents: {len(self.agents)}")
58             self.LOCK.release()
59
60 server = Server()
61 server.up_server()
```

اجرای کد :

```
Command Prompt - python agent.py
Can not connect to the server!
Do you want to try again? [y/n]: y
Connected to the server!
{'cpu_percent': 3.2, 'mem_percent': 49.8}
Sent
{'cpu_percent': 2.7, 'mem_percent': 49.8}
Sent
{'cpu_percent': 7.7, 'mem_percent': 49.8}
Sent
{'cpu_percent': 3.5, 'mem_percent': 49.8}
Sent
{'cpu_percent': 2.3, 'mem_percent': 49.8}
Sent
{'cpu_percent': 4.3, 'mem_percent': 49.8}
Sent
{'cpu_percent': 14.5, 'mem_percent': 50.2}
Sent
{'cpu_percent': 8.9, 'mem_percent': 50.2}
Sent

Command Prompt - python agent.py
C:\Users\amirr\Desktop\CNP>python agent.py
Connected to the server!
{'cpu_percent': 50.0, 'mem_percent': 49.8}
Sent
{'cpu_percent': 1.6, 'mem_percent': 49.8}
Sent
{'cpu_percent': 4.2, 'mem_percent': 49.8}
Sent
{'cpu_percent': 3.1, 'mem_percent': 49.8}
Sent
{'cpu_percent': 15.2, 'mem_percent': 50.2}
Sent
{'cpu_percent': 8.2, 'mem_percent': 50.2}
Sent

C:\Users\amirr\Desktop\CNP>python server.py
Server is listening...
Connected to agent 1 with ('127.0.0.1', 50012)
{'cpu_percent': 3.2, 'mem_percent': 49.8}
{'cpu_percent': 2.7, 'mem_percent': 49.8}
{'cpu_percent': 7.7, 'mem_percent': 49.8}
Connected to agent 2 with ('127.0.0.1', 50015)
{'cpu_percent': 50.0, 'mem_percent': 49.8}
{'cpu_percent': 3.5, 'mem_percent': 49.8}
{'cpu_percent': 1.6, 'mem_percent': 49.8}
{'cpu_percent': 2.3, 'mem_percent': 49.8}
{'cpu_percent': 4.2, 'mem_percent': 49.8}
{'cpu_percent': 4.3, 'mem_percent': 49.8}
{'cpu_percent': 3.1, 'mem_percent': 49.8}
{'cpu_percent': 14.5, 'mem_percent': 50.2}
{'cpu_percent': 15.2, 'mem_percent': 50.2}
{'cpu_percent': 8.9, 'mem_percent': 50.2}
{'cpu_percent': 8.2, 'mem_percent': 50.2}
```

Metric cpu_usage:

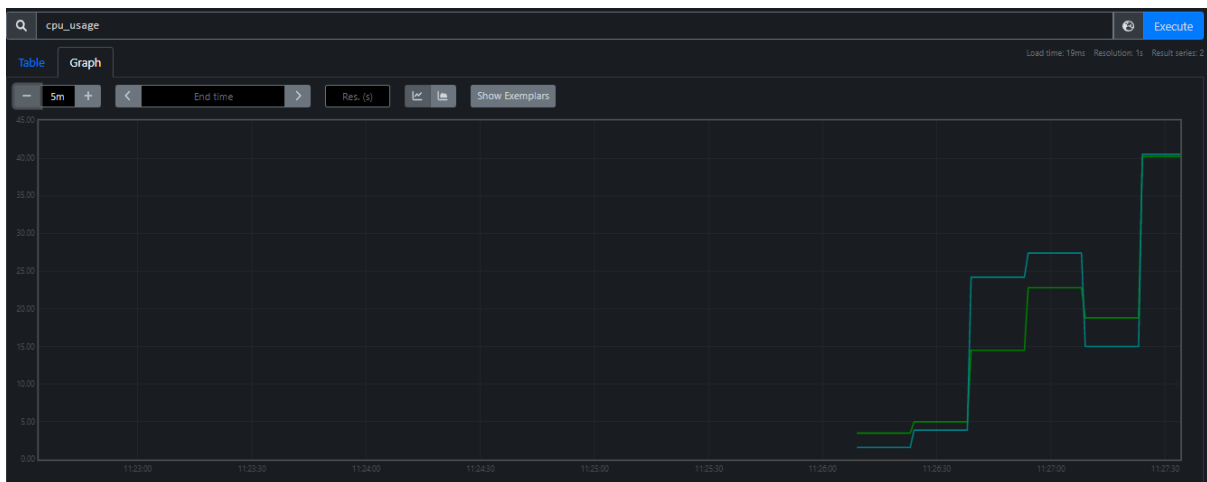
cpu_usage

Table Graph

Load time: 18ms Resolution: 1s Result series: 2

Evaluation time	
cpu_usage[agent='agent1', instance='localhost8080', job='RJ']	14.5
cpu_usage[agent='agent2', instance='localhost8080', job='RJ']	24.2

Remove Panel



Metric virtual_memory_percent:

