Distributed Map Reduce

A. Emirhan Karagül - M. Hakan Kurtoğlu

Bogazici University

December 24, 2018

Problem Definition

- Lots of idle resources are present in the office network
- Not enough local computing power
- Overhead of using cloud computing
- Need for a neat CLI tool for remote execution in LAN
- Simple as spinning threads

Implementation Details

Client

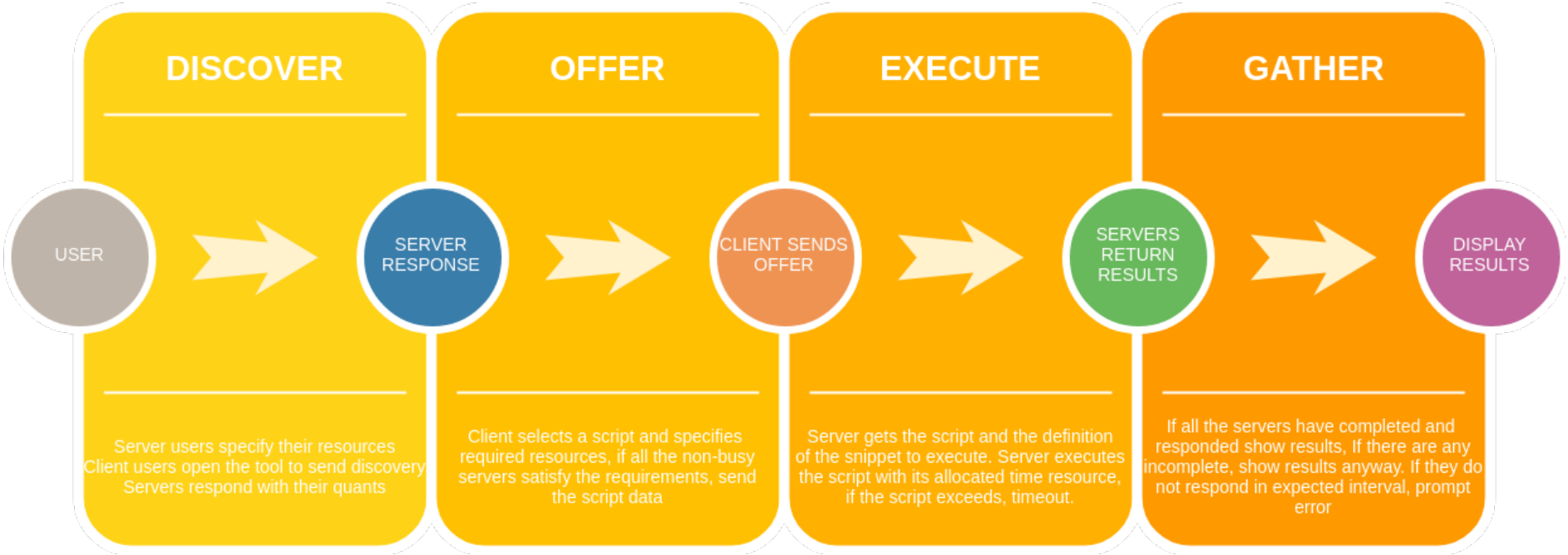
- Backbones of the office
- Potential to leverage parallel execution over LAN
- Send discoveries via UDP Broadcast
- Scatter operations
- Gather results

Implementation Details

Server

- Idle computers in the office
- Computers that are being used for excel only by our coworkers :)
- Waiting for discoveries (UDP)
- Respond to script offers with their status
- Execute script to read contents and send back
- Times out on reaching time resource allocated

Proposed Solution



Example

```
#### This block is mandatory for our system
num_ops = 45
offset = int(sys.argv[1])
limit = int(sys.argv[2])
####

courses = ['CMPE140','CMPE150','CMPE210','CMPE220','CMPE250','CMPE300','CMPE322',
           'CMPE343','CMPE344','CMPE350','CMPE422','CMPE425','CMPE434','CMPE436',
           'CMPE443','CMPE446','CMPE451','CMPE451','CMPE475','CMPE480','CMPE483',
           'CMPE487','CMPE489','CMPE491','CMPE492','CMPE49F','CMPE511','CMPE521',
           'CMPE530','CMPE537','CMPE547','CMPE561','CMPE579','CMPE581','CMPE58C',
           'CMPE58D','CMPE58H','CMPE58S','CMPE595']

url = 'http://registration.boun.edu.tr/scripts/quotasearch.asp'
for i in range(offset,offset+limit,1):
    body = {
        'abbr': courses[i][:4],
        'code': courses[i][-3:],
        'section': "01"
        }
    r = requests.post(url=url, data = body)
    result = re.search('Max\. Classroom Capacity:</b> (\d+)<br>',r.text)
    ##### Printing the result is also mandatory
    print("Capacity for course: " + courses[i] +" is: " + result.group(1))
    ##### As we capture the output from stdout
```

Figure: Example script

```
=== Show results ===


[0, 3]
Capacity for course: CMPE140 is: 168
Capacity for course: CMPE150 is: 182
Capacity for course: CMPE210 is: 81
Capacity for course: CMPE220 is: 90
Capacity for course: CMPE250 is: 95
Capacity for course: CMPE300 is: 106
Capacity for course: CMPE322 is: 106
Capacity for course: CMPE343 is: 106
Capacity for course: CMPE344 is: 106
Capacity for course: CMPE350 is: 106
```

Figure: Example result

Thank You
For Your Attention!