Flipkart

GRID 3.0

Problem Statement: Asset Discovery Tool

Team Name   : Team-OP

Institute Name: Bhagwan Parshuram Institute of Technology

Team members details

Team Name	Team OP		
Institute Name	Bhagwan Parshuram Institute of Technology (BPIT), Delhi		
Team Members >	1 (Leader)	2	3
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Batch	2020-24	2020-24	2020-24

Solution statement 🤝

What is asset management?
It's basically a centralized way for you to monitor and manage your businesses' assets.

The great news is that, if done properly, you can increase productivity and efficiency within your department.

In our opinion, you'd be daft not to! Having such a tool in place will let you track the overall access of your assets. The data you get back will allow you to make sure assets are being utilized efficiently, and gives you the power to review performance and highlight additional unnecessary access.

Proposed approach

- Getting the Ip address of the device which accessed the asset.

- Scan the given Ip to collect comprehensive data.

- Storing that data in NoSQL database and making an API endpoint to fetch the contents of database.

- Maintaining a Web GUI which displays the results stored in the database and a functionality to segregate records on the basis of searches.

Algorithmic Flowchart

Scanner
- Scans for required info

Database Storage
- API Response

Web GUI
- Filtered Search
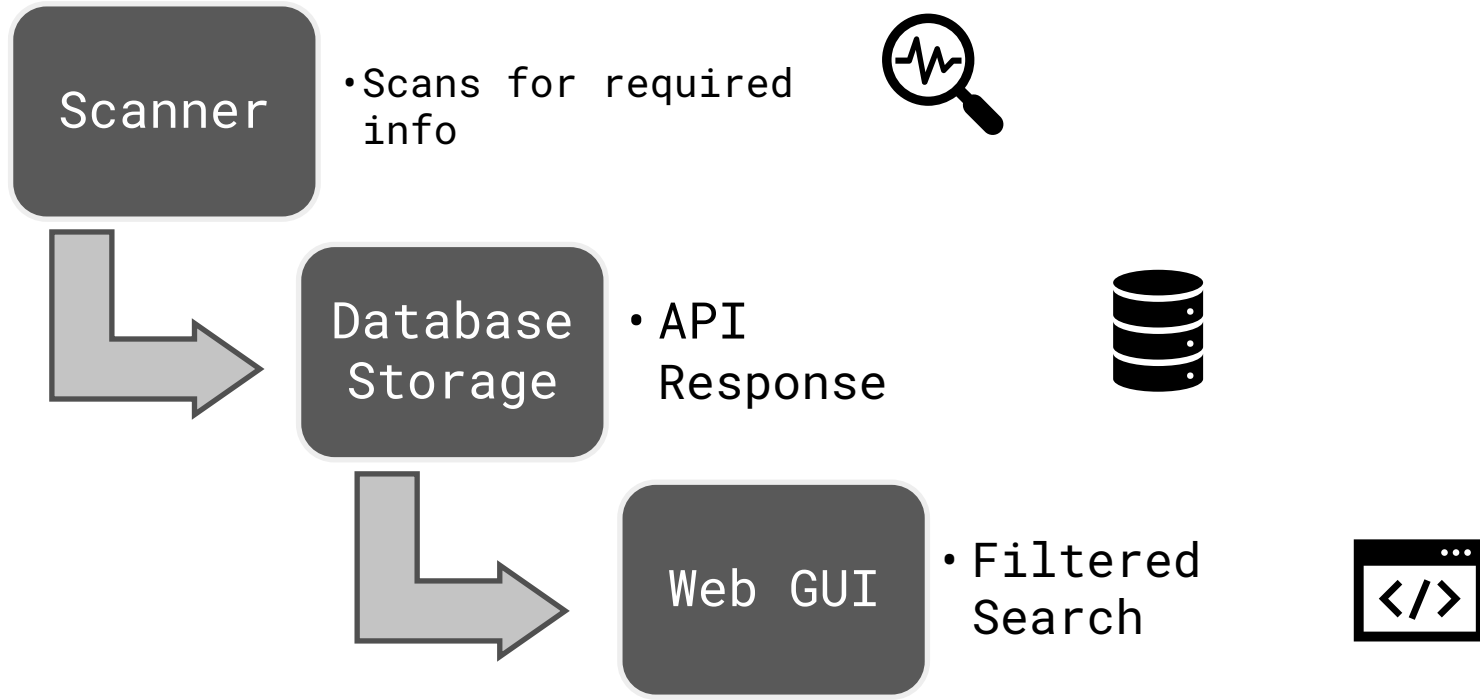
Use-cases

- Asset tracking provides valuable, high-level insight into the performance of your business's physical spaces, including the office, warehouse, and storage.

- This is important because it enables you to identify important links in the way these sectors utilize assets so they can streamline business operations.

- Considering a multinational company, we can put asset discovery tool into use where scanning all the local and remote connections on the server. (P0)

- This tool provides a detailed information for all the systems and maintains a database for it. (P1)

- There is Web GUI for data representation and segregation using the search functionality. (P2)

- It also stores the history of all connections and make real time updates in database. (P3)

Limitations ✋

- API Authentication is fragile

- Limited search functionality

- Scanning is not multi-threaded

Future Scope 📈

- Adding a key signing authentication to access API

- Using Regex to increase search functionality

- Adding more information in scan like services running, ports opened, etc.

- Making Column filters in Web GUI.

- Integration for logging to a third party application like Slack/Discord/Telegram.

"data": [
  {
    "Connection Type": "Remote",
    "Hostname": "arsenal",
    "MAC-Address": "EF:86:7F:AE:8E:9F",
    "IP": "216.216.123.4",
    "Operating System": "Windows",
    "Last Seen": "undefined",
    "Workgroup/Domain": "undefined"
  },
  {
    "Connection Type": "Local",
    "Hostname": "arsenal",
    "MAC-Address": "EF:86:7F:AE:8E:9F",
    "IP": "216.216.123.4",
    "Operating System": "Windows",
    "Last Seen": "undefined",
    "Workgroup/Domain": "undefined"
  },
  {
    "Connection Type": "Local",
    "Hostname": "vm1.internal.cloudapp.net",
    "MAC-Address": "undefined",
    "IP": "10.0.0.4",
    "Operating System": "Linux",
    "Last Seen": "undefined",
    "Workgroup/Domain": "undefined"
  },
  {
    "Connection Type": "Local",
    "Hostname": "vm2.internal.cloudapp.net",
    "MAC-Address": "12:34:56:78:9A:BC",
    "IP": "10.0.0.5",
    "Operating System": "Linux",
    "Last Seen": "Wed Jul 21 15:49:26 2021",
    "Workgroup/Domain": "undefined"
  }
]
}

https://teamop.winoff.ml/users
teamop.winoff.ml/users

Raw   Parsed

azureuser@VM1:~

```
azureuser@VM1:~/python-app/python-app$ sudo python3 app.py
 * Serving Flask app 'app' (lazy loading)
 * Environment: production
   WARNING: This is a development server. Do not use it in a production de
ployment.
   Use a production WSGI server instead.
 * Debug mode: off
 * Running on all addresses.
   WARNING: This is a development server. Do not use it in a production de
ployment.
 * Running on http://10.0.4:80/ (Press CTRL+C to quit)
172.68.144.232 - - [22/Jul/2021 14:30:47] "GET /users HTTP/1.1" 200 -
162.158.167.236 - - [22/Jul/2021 14:30:51] "OPTIONS /users HTTP/1.1" 200 -
162.158.167.236 - - [22/Jul/2021 14:30:52] "GET /users HTTP/1.1" 200 -
20.198.79.186 - - [22/Jul/2021 14:31:16] "POST /users HTTP/1.1" 201 -
```

```
azureuser@VM1:~$ ./mon.py
```

[+]Processing output
[+]Connection Type discovered
[+]Hostname found
[+]MAC-Address found
[+]Operating System found
{"data": [{"Connection Type": "Local", "Hostname": "vm2.internal.cloudapp.
net", "MAC-Address": "12:34:56:78:9A:BC", "IP": "10.0.0.5", "Operating Sys
tem": "Linux", "Last Seen": "Thu Jul 22 14:31:16 2021", "Workgroup/Domain"
: "undefined"}], "update": "Updated Entry: MAC-Address → 12:34:56:78:9A:B
C"}

azureuser@VM1:~$

✦ Proof of Concept

TEAM OP
fkart-grid-3-mqmc6.ondigitalocean.app

FLIPMON   Search   Show History

Connection Type	Hostname	MAC-Address	IP Address	Operating System	Last Seen	Workgroup/Domain
Remote	arsenal	EF:86:7F:AE:8E:9F	216.216.123.4	Windows	undefined	undefined
Local	arsenal	EF:86:7F:AE:8E:9F	216.216.123.4	Windows	undefined	undefined
Local	vm1.internal.cloudapp.net	undefined	10.0.0.4	Linux	undefined	undefined
Local	vm2.internal.cloudapp.net	12:34:56:78:9A:BC	10.0.0.5	Linux	Wed Jul 21 15:49:26 2021	undefined

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```
azureuser@VM1:~$ ./mon.py

'########:'##:::::::::'##::'########::'##::::'##:::'####:::'##:::  ##:
 ##.....:: ##:::::::::'####::  ##.... ##: ###::'###:'##.. ##:: ###:: ##:
 ##:::::::: ##:::::::.. ##::  ##:::: ##: ####'####:'##:::: ##: ####: ##:
 #####:::: ##:::::::: ##::  ########:: ## ### ##::'##:::: ##: ## ## ##:
 ##...:::: ##:::::::: ##::  ##.....:: ##. #; ##: ##:::::: ##: ##. ####:
 ##:::::::: ##:::::::: ##::  ##:::::::: ##:.: ##:. ##:: ##:::: ##:. ###:
 ##:::::::: ########::'#####:: ##:::::::: ##::::  ##::. ####:::: ##::. ##:
..:::::::..........::..::.....:: ..:::::::::..::::..:::..:::::....::::..::::..::

[+]Processing output
[+]Connection Type discovered
[+]Hostname found
[+]Operating System found
{'Type': 'Local', 'Last Seen': 'Sat Jul 24 14:46:34 2021', 'Hostname': 'undefined', 'MAC': 'undefined', 'IP': 'undefined
', 'OS': 'undefined', 'hostname': 'vm1.internal.cloudapp.net', 'ip': '10.0.0.4', 'Operating System': 'Linux'}
azureuser@VM1:~$
```

Scanner tool that provides
all the info

```json
{
  "data": [
    {
      "Connection Type": "Remote",
      "Hostname": "arsenal",
      "MAC-Address": "EF:86:7F:AE:8E:9F",
      "IP": "216.216.123.4",
      "Operating System": "Windows",
      "Last Seen": "undefined",
      "Workgroup/Domain": "undefined"
    },
    {
      "Connection Type": "Local",
      "Hostname": "arsenal",
      "MAC-Address": "EF:86:7F:AE:8E:9F",
      "IP": "216.216.123.4",
      "Operating System": "Windows",
      "Last Seen": "undefined",
      "Workgroup/Domain": "undefined"
    },
    {
      "Connection Type": "Local",
      "Hostname": "vm1.internal.cloudapp.net",
      "MAC-Address": "undefined",
      "IP": "10.0.0.4",
      "Operating System": "Linux",
      "Last Seen": "undefined",
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    },
    {
      "Connection Type": "Local",
      "Hostname": "vm2.internal.cloudapp.net",
      "MAC-Address": "12:34:56:78:9A:BC",
      "IP": "10.0.0.5",
      "Operating System": "Linux",
      "Last Seen": "Thu Jul 22 14:31:16 2021",
      "Workgroup/Domain": "undefined"
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   Use a production WSGI server instead.
 * Debug mode: off
 * Running on all addresses.
   WARNING: This is a development server. Do not use it in a production deployment.
 * Running on http://10.0.0.4:80/ (Press CTRL+C to quit)
172.68.144.69 - - [24/Jul/2021 15:08:11] "GET /users HTTP/1.1" 200 -

Database Management and its API Endpoint

Connection Type	Hostname	MAC-Address	IP Address	Operating System	Last Seen	Workgroup/Domain
Remote	arsenal	EF:86:7F:AE:8E:9F	216.216.123.4	Windows	undefined	undefined
Local	arsenal	EF:86:7F:AE:8E:9F	216.216.123.4	Windows	undefined	undefined
Local	vm1.internal.cloudapp.net	undefined	10.0.0.4	Linux	undefined	undefined
Local	vm2.internal.cloudapp.net	12:34:56:78:9A:BC	10.0.0.5	Linux	Thu Jul 22 14:31:16 2021	undefined

FLIPMON

Search

Show History

Web Interface

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🔗 Links

```
API Endpoint        :-    https://teamop.winoff.ml/users

Web GUI             :-    https://fkart-grid-3-mqmc6.ondigitalocean.app/

Video Demo          :-    https://youtu.be/A3u3_C1lL-s
```