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MODUL 4

Membangun dan Menguji REST API antar VM

PEMBAHASAN

Modul ini membahas proses pengujian REST API pada arsitektur client-server yang dijalankan menggunakan dua Virtual Machine (VM) yang saling terhubung dalam satu jaringan. Pada modul ini, VM server berperan sebagai penyedia layanan backend (REST API) menggunakan Node.js dan Express.js, sedangkan VM client berfungsi sebagai pengirim request HTTP yang akan mengakses API tersebut. Peserta akan mempelajari cara:

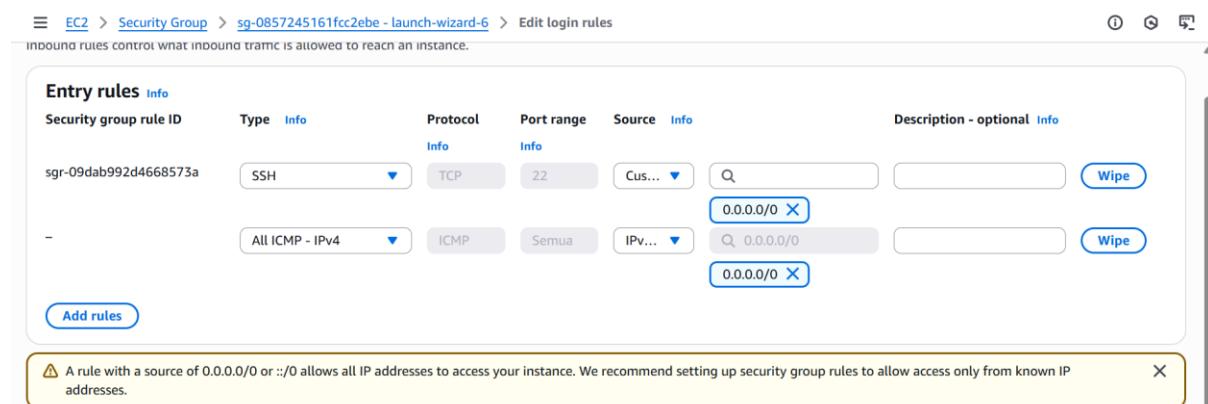
1. Membangun REST API sederhana di VM server.
2. Mengonfigurasi server agar dapat diakses dari jaringan lain.
3. Melakukan komunikasi antar VM dengan perintah curl untuk menguji endpoint API. Melalui kegiatan ini, peserta memahami konsep dasar komunikasi jaringan antar mesin virtual, mekanisme request-response RESTful, serta pengujian koneksi layanan backend dalam konteks lingkungan cloud atau virtualisasi.

KESIMPULAN

Pada modul ini saya belajar bagaimana proses pengujian REST API pada arsitektur client-server yang dijalankan menggunakan 2 virtual yang saling terhubung. Saya menggunakan port 5000.

LAMPIRAN

vm-client



The screenshot shows the 'Edit login rules' page for a security group named 'sg-0857245161fcc2ebe'. It displays two entries in the 'Entry rules' table:

| Security group rule ID | Type | Protocol | Port range | Source | Description - optional |
|------------------------|-----------------|----------|------------|---|------------------------|
| sgr-09dab992d4668573a | SSH | TCP | 22 | Cus... <input type="text" value="0.0.0.0/0"/> | |
| - | All ICMP - IPv4 | ICMP | Semua | IPv... <input type="text" value="0.0.0.0/0"/> | |

A warning message at the bottom left states: "⚠ A rule with a source of 0.0.0.0/0 or ::/0 allows all IP addresses to access your instance. We recommend setting up security group rules to allow access only from known IP addresses." There are 'Cancel', 'Preview changes', and 'Save rules' buttons at the bottom right.

vm-server

EC2 > Grup Keamanan > sg-0cefce3ebbd7e6e22 - launch-wizard-4 > Edit aturan masuk

| ID aturan grup keamanan | Jenis | Protokol | Rentang port | Sumber | Deskripsi - opsional |
|-------------------------|-------------------|----------|--------------|------------------|----------------------|
| sgr-07ed787a18cbfd19c | SSH | TCP | 22 | Ku... 0.0.0.0/0 | Hapus |
| - | TCP Kustom | TCP | 3000 | IPv... 0.0.0.0/0 | Hapus |
| - | Semua ICMP - IPv4 | ICMP | Semua | IPv... 0.0.0.0/0 | Hapus |

[Tambahkan aturan](#)

⚠️ Aturan dengan sumber 0.0.0.0/0 atau ::/0 memungkinkan semua IP mengakses instans Anda. Sebaiknya atur aturan grup keamanan untuk mengizinkan akses hanya dari alamat IP yang diketahui.

Hubungkan

EC2 > Instans > i-0366cf8534f5f17bf > Hubungkan ke instans

Tipe koneksi

- Hubungkan menggunakan IP Publik
Hubungkan menggunakan alamat IPv4 atau IPv6 publik
- Hubungkan menggunakan IP Privat
Hubungkan menggunakan alamat IP privat dan titik akhir VPC

Alamat IPv4 publik
54.234.1.18.28

Alamat IPv6

Nama pengguna

Masukkan nama pengguna yang ditentukan dalam AMI yang digunakan untuk meluncurkan instans. Jika Anda tidak menentukan nama pengguna kustom, gunakan nama pengguna default, ubuntu.

ubuntu

💡 Catatan: Dalam kebanyakan kasus, nama pengguna default, ubuntu, benar. Namun, baca instruksi penggunaan AMI Anda untuk memeriksa apakah pemilik AMI telah mengubah nama pengguna AMI default.

Batalkan Hubungkan

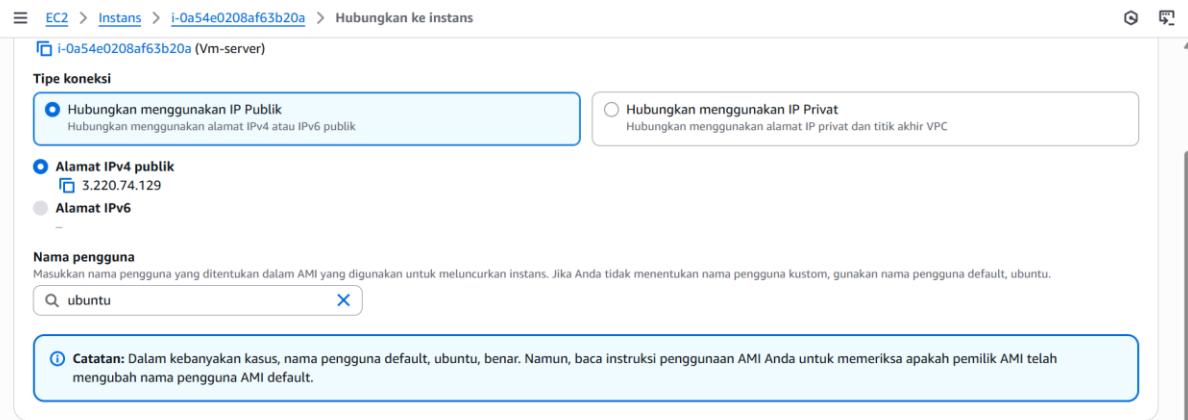
Instans (1/5) [Info](#)

| Name | ID Instans | Status instans | Tipe instans | Pemeriksaan statu | Status alarm |
|-----------|---------------------|----------------|--------------|-------------------|---------------|
| Vm-client | i-065d6d6591b9cf52 | Menjalankan | t3.micro | 3/3 pemeriksaan | Lihat alarm + |
| vm-client | i-0366cf8534f5f17bf | Menjalankan | t2.medium | 2/2 pemeriksaan | Lihat alarm + |

```
ubuntu@ip-172-31-29-1:~$ sudo apt install curl -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
curl is already the newest version (8.5.0-2ubuntu10.6).
curl set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-172-31-29-1:~$
```

Instans (1/5) [Info](#)

| Name | ID Instans | Status instans | Tipe instans | Pemeriksaan statu | Status alarm |
|-----------|---------------------|----------------|--------------|-------------------|---------------|
| Vm-server | i-0a54e0208af63b20a | Menjalankan | t2.micro | 2/2 pemeriksaan | Lihat alarm + |



The list of available updates is more than a week old.
To check for new updates run: sudo apt update

```
Last login: Thu Oct 16 08:35:30 2025 from 103.98.239.23  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.
```

```
ubuntu@ip-172-31-26-76:~$ sudo apt update && sudo apt upgrade -y
```

i-0a54e0208af63b20a (Vm-server)

PublicIPs: 3.220.74.129 PrivateIPs: 172.31.26.76

```
No containers need to be restarted.
```

```
User sessions running outdated binaries:  
ubuntu @ session #6: apt[2055], sshd[1180,1640]  
ubuntu @ user manager service: systemd[1527]
```

```
No VM guests are running outdated hypervisor (qemu) binaries on this host.  
ubuntu@ip-172-31-26-76:~$ sudo install curl -y
```

i-0a54e0208af63b20a (Vm-server)

PublicIPs: 3.220.74.129 PrivateIPs: 172.31.26.76

```
ubuntu@ip-172-31-26-76:~$ curl -fsSL https://deb.nodesource.com/setup_20.x | sudo -E bash -  
2025-10-23 09:04:11 - Installing pre-requisites  
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease  
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease  
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease  
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
All packages are up to date.  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
ca-certificates is already the newest version (20240203).  
ca-certificates set to manually installed.  
curl is already the newest version (8.5.0-2ubuntu10.6).  
gnupg is already the newest version (2.4.4-2ubuntu17.3).  
gnupg set to manually installed.  
The following NEW packages will be installed:  
  apt-transport-https  
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
```

i-0a54e0208af63b20a (Vm-server)

PublicIPs: 3.220.74.129 PrivateIPs: 172.31.26.76

```
ubuntu@ip-172-31-26-76:~$ sudo apt install nodejs -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  nodejs
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 32.0 MB of archives.
After this operation, 197 MB of additional disk space will be used.
Get:1 https://deb.nodesource.com/node_20.x nodistro/main amd64 nodejs amd64 20.19.5-1nodesource1 [32.0 MB]
Fetched 32.0 MB in 1s (63.4 MB/s)
Selecting previously unselected package nodejs.
(Reading database ... 103375 files and directories currently installed.)
Preparing to unpack .../nodejs_20.19.5-1nodesource1_amd64.deb ...
Unpacking nodejs (20.19.5-1nodesource1) ...
Setting up nodejs (20.19.5-1nodesource1) ...
Processing triggers for man-db (2.12.0-4build2) ...
Scanning processes... [
  Scanning processes... [==          Scanning processes... [=          Scanning processes... [==
  Scanning processes... [=====      Scanning processes... [=====      Scanning processes... [=====
ning processes... [=====
```

i-0a54e0208af63b20a (Vm-server)

Public IPs: 3.220.74.129 Private IPs: 172.31.26.76

```
ubuntu@ip-172-31-26-76:~$ git clone https://github.com/akbarwjyy/student-api.git
Cloning into 'student-api'...
remote: Enumerating objects: 9, done.
remote: Counting objects: 100% (9/9), done.
remote: Compressing objects: 100% (6/6), done.
remote: Total 9 (delta 3), reused 8 (delta 2), pack-reused 0 (from 0)
Receiving objects: 100% (9/9), 9.20 KiB | 1.84 MiB/s, done.
Resolving deltas: 100% (3/3), done.
ubuntu@ip-172-31-26-76:~$ █
```

i-0a54e0208af63b20a (Vm-server)

Public IPs: 3.220.74.129 Private IPs: 172.31.26.76

```
ubuntu@ip-172-31-26-76:~$ cd student-api  
ubuntu@ip-172-31-26-76:~/student-api$ █
```

i-0a54e0208af63b20a (Vm-server)

Public IPs: 3.220.74.129 Private IPs: 172.31.26.76

```
ubuntu@ip-172-31-26-76:~/student-api$ npm install
added 68 packages, and audited 69 packages in 2s
16 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
npm notice
npm notice New major version of npm available! 10.8.2 -> 11.6.2
npm notice Changelog: https://github.com/npm/cli/releases/tag/v11.6.2
npm notice To update run: npm install -g npm@11.6.2
npm notice
ubuntu@ip-172-31-26-76:~/student-api$ █
```

i-0a54e0208af63b20a (Vm-server)

PublicIPs: 3.220.74.129 PrivateIPs: 172.31.26.76

```
ubuntu@ip-172-31-26-76:~/student-api$ node index.js
Server berjalan di http://0.0.0.0:3000
█
```

i-0a54e0208af63b20a (Vm-server)

PublicIPs: 3.220.74.129 PrivateIPs: 172.31.26.76

```
ubuntu@ip-172-31-29-1:~$ curl -X POST http://172.31.26.76:5000/api/register \
-H "Content-Type: application/json" \
-d '{"nama":"Fidelia Ping","nim":"245410012"}'
█
```

i-0366cf8534f5f17bf (vm-client)

PublicIPs: 54.234.118.28 PrivateIPs: 172.31.29.1