

Implementasi VPN WireGuard untuk Secure Remote Access

Kelompok 7 - Topik 7

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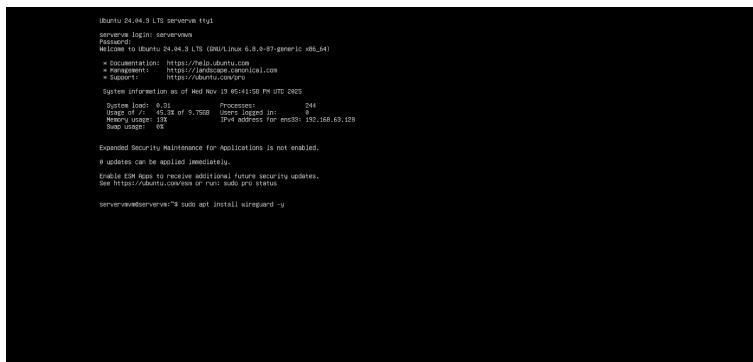
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Minggu: 2

Pada minggu ini dilakukan proses instalasi paket VPN WireGuard pada kedua mesin Linux yang telah disiapkan pada minggu sebelumnya. Tujuan tahap ini adalah memastikan bahwa software WireGuard berhasil terpasang dan siap digunakan untuk proses konfigurasi pada minggu selanjutnya.

Tahapan dan Proses:

1. Menginstal paket WireGuard pada kedua mesin Linux.



```
ubuntu:~# sudo apt install wireguard -y
[sudo] password for ubuntu:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  wireguard
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 0 B/10.2 kB of archives.
After this operation, 40.0 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu focal/main amd64 wireguard [40.0 kB]
Fetched 40.0 kB in 0s (0 B/s)
Selecting previously unselected package wireguard.
(Reading database ... 244 packages available)
Preparing to unpack .../wireguard_0.0.8-0.1_all.deb ...
Unpacking wireguard (0.0.8-0.1) ...
Setting up wireguard (0.0.8-0.1) ...
Enabled security enhancement for applications is not enabled.
It's recommended to enable security enhancement.
To do this, Edit /etc/apparmor.d/usr.libexec.wireguard.conf file and add:
See https://ubuntu.com/apparmor or man apparmor for details.

ubuntu:~#
```

Pada tahap ini dilakukan proses instalasi paket WireGuard pada kedua mesin virtual, yaitu Ubuntu Server dan Ubuntu Client. Instalasi dilakukan melalui terminal menggunakan perintah sudo apt install wireguard -y.

- a. VM Server

Pada VM Server, perintah tersebut dijalankan pada lingkungan terminal berbasis teks (CLI). Sistem kemudian mengunduh dan memasang paket WireGuard beserta dependensinya untuk menyiapkan fungsi VPN pada server.

```

melah@melah-VMwareVirtualPlatform: ~$ sudo apt install wireguard-tools
[...]
Reading state information... Done
Building dependency tree... Done
Reading state information... Done
A package downgrade will be performed.
The following packages were automatically installed and are no longer required:
  liblvm2
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  wireguard-tools
0 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 92.2 kB of archives.
After this operation, 345 kB of additional disk space will be used.
Get:1 http://ld.archive.ubuntu.com/ubuntu/noble/main amd64 wireguard-tools amd64 1.0.20210914~ubuntuf4 [89.1 kB]
Get:2 http://ld.archive.ubuntu.com/ubuntu/noble/universe amd64 wireguard-tools all 1.0.20210914~ubuntuf4 [3.086 kB]
Fetched 92.2 kB in 4s (21.3 kB/s)
Selecting previously unselected package wireguard-tools.
(Reading database ... )

```

b. VM Client

Pada VM Client, instalasi dilakukan melalui terminal di lingkungan Ubuntu Desktop. Prosesnya serupa, sistem melakukan pembaruan daftar paket dan menginstal komponen WireGuard dan WireGuard-tools yang dibutuhkan untuk membuat koneksi ke server.

2. Memverifikasi keberhasilan instalasi WireGuard.

```

The following NEW packages will be installed:
  wireguard-tools
0 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 92.2 kB of additional disk space will be used.
Get:1 http://ld.archive.ubuntu.com/ubuntu/noble/main amd64 wireguard-tools amd64 1.0.20210914~ubuntuf4 [89.1 kB]
Get:2 http://ld.archive.ubuntu.com/ubuntu/noble/universe amd64 wireguard-tools all 1.0.20210914~ubuntuf4 [3.086 kB]
Fetched 92.2 kB in 2s (43.5 kB/s)
Selecting previously unselected package wireguard-tools.
(Reading database ... )
Preparing to unpack .../wireguard-tools_1.0.20210914~ubuntuf4_amd64.deb ...
Unpacking wireguard-tools (1.0.20210914~ubuntuf4) ...
Selecting previously unselected package wireguard-tools-all.
Preparing to unpack .../wireguard-tools_1.0.20210914~ubuntuf4_all.deb ...
Unpacking wireguard-tools (1.0.20210914~ubuntuf4) ...
Setting up wireguard-tools (1.0.20210914~ubuntuf4) ...
wireguard-tools is already installed, not upgrading.
Setting up wireguard-tools-all (1.0.20210914~ubuntuf4) ...
Processing triggers for man-db (2.12.0-4ubuntu2) ...
Scanning for broken packages...
Scanning for broken packages...
Scanning for broken packages...
Scanning for broken packages...
Running kernel seems to be up-to-date.
No services need to be restarted.
No containers need to be restarted.
No user sessions are running outdated binaries.
No VM guests are running outdated hypervisor (qemu) binaries on this host.
Server-side tools are up-to-date.
wireguard-tools v1.0.20210914 - https://git.zx2c4.com/wireguard-tools/
servervm@servervm:~$ ddkg -l | grep wireguard
(ddkg: error: unknown option -l

Type ddkg -help for help about installing and deinstalling packages [*]:
Type ddkg -lhelp for help about listing installed packages[*] and their management;
Type ddkg -lhelp for a list of ddkg debug flag values;
Type ddkg --force-help for a list of forcing options;
Type ddkg -dbb for help about manipulating *.deb files;

Detections marked [*] produce a lot of output - pipe it through 'less' or 'more'!
servervm@servervm:~$ ddkg -l | grep wireguard
all          fast, modern, secure kernel VPN tunnel (metapackage)
all          fast, modern, secure kernel VPN tunnel (userland utilities)
ii  wireguard-tools      1.0.20210914~ubuntuf4          all
ii  wireguard-tools      1.0.20210914~ubuntuf4          amd64

```

Pada bagian ini, sistem melakukan proses instalasi paket WireGuard untuk VM Server dan dependensinya. Setelah proses instalasi selesai:

- Terminal menunjukkan bahwa paket wireguard-tools berhasil dipasang.
- Tidak ada error selama instalasi.
- Kernel modules yang dibutuhkan (seperti wireguard ataupun wg) telah dimuat.
- Sistem siap digunakan tanpa membutuhkan reboot.

```
melah@melah-Virtual-Platform:~$ Get:2 http://ld.archive.ubuntu.com/ubuntu noble/universe amd64 wireguard-all 1.0+20210914~ubuntu [3,486 B] Fetched 3,486 B in 0s (1,024 B/s) Selecting previously unselected package wireguard-tools. (Reading database ... 1,66638 files and directories currently installed.) Preconfiguring packages ... Unpacking wireguard-tools (1:0.0.20210914~ubuntu) ... Selecting previously unselected package wireguard. Preconfiguring packages ... Unpacking wireguard (1:0.0.20210914~ubuntu) ... Setting up wireguard-tools (1:0.0.20210914~ubuntu) ... Setting up wireguard (1:0.0.20210914~ubuntu) ... Processing triggers for man-db (2.12.0-8ubuntu0.2) ... wireguard-tools v1.0.20210914~ https://git.zx2c4.com/wireguard-tools/ melah@melah-Virtual-Platform:~$ dpkg -l | grep wireguard ii wireguard all fast, modern, secure kernel VPN tunnel (metapackage) ii wireguard-tools all fast, modern, secure kernel VPN tunnel (userland utilitii ex) melah@melah-Virtual-Platform:~$ sudo ls /etc/wireguard melah@melah-Virtual-Platform:~$
```

Di sisi client, langkah verifikasi dilakukan dengan cara:

- Menjalankan perintah sudo apt install wireguard dan memastikan proses instalasi berjalan sukses.
- Mengecek apakah direktori konfigurasi /etc/wireguard sudah tersedia menggunakan sudo ls /etc/wireguard.
- Jika folder tersebut muncul (meski kosong), berarti instalasi WireGuard berhasil dan sistem siap untuk pembuatan file konfigurasi.

Hasil:

- WireGuard berhasil terinstal pada kedua VM (server dan client).
- Perintah verifikasi (wg --version dan dpkg -l | grep wireguard) menunjukkan bahwa paket terpasang dengan benar.
- Lingkungan siap digunakan untuk tahap konfigurasi VPN WireGuard pada minggu ke-3.