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Tugas 3 – Infrastruktur Big Data Bagian-1 (HDFS)

Tugas:

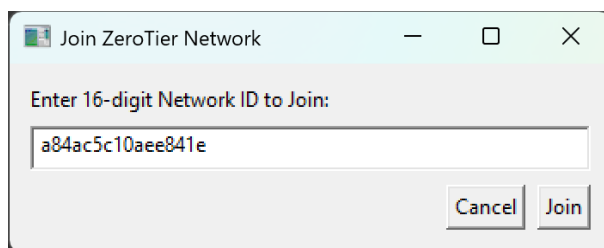
- Terhubung ke cluster Hadoop.
- Jalankan 3 perintah dasar tadi.
- Catatan: Untuk folder yang dibuat, beri nama dengan NoAbsen_NamaAnda

Pengerjaan:

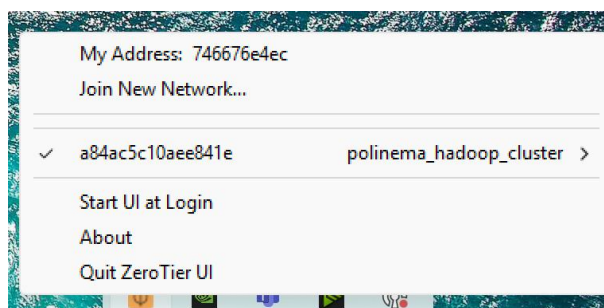
Langkah-langkah untuk terhubung ke cluster Hadoop:

1. Install dan konfigurasi VPN Client

Memasukkan network ID VPN dari dosen lalu klik Join



Tunggu sebentar, maka akan tampil seperti gambar di bawah yang artinya sudah connect.



2. Menguji apakah sudah terhubung dengan jaringan VPN cluster Hadoop dengan melakukan PING ke 172.29.247.62

```
C:\WINDOWS\system32\CMD X + v
Microsoft Windows [Version 10.0.26100.3194]
(c) Microsoft Corporation. All rights reserved.

C:\Users\TRIYANA DF>ping 172.29.247.62

Pinging 172.29.247.62 with 32 bytes of data:
Reply from 172.29.247.62: bytes=32 time=997ms TTL=64
Reply from 172.29.247.62: bytes=32 time=586ms TTL=64
Reply from 172.29.247.62: bytes=32 time=260ms TTL=64
Reply from 172.29.247.62: bytes=32 time=263ms TTL=64

Ping statistics for 172.29.247.62:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 260ms, Maximum = 997ms, Average = 526ms

C:\Users\TRIYANA DF>
```

3. Mengakses Cluster Hadoop perlu terhubung dengan namenode nya.

Caranya: Buka terminal dan ketikkan perintah **ssh hadoopuser@172.29.247.62** lalu masukkan password **hadoop**.

```
hadoopuser@hadoop-namen X + v
C:\Users\TRIYANA DF>ssh hadoopuser@172.29.247.62
The authenticity of host '172.29.247.62 (172.29.247.62)' can't be established.
ED25519 key fingerprint is SHA256:BjHVtsH6B+jEGxXCmJXyg4N7pbcIvsSS+Eih0qkHOE.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '172.29.247.62' (ED25519) to the list of known hosts.
hadoopuser@172.29.247.62's password:
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.8.0-53-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Tue Feb 25 07:33:08 AM UTC 2025

System load:  0.0               Processes:            123
Usage of /:   62.6% of 9.74GB   Users logged in:     1
Memory usage: 31%              IPv4 address for enp0s3: 192.168.2.148
Swap usage:   0%

 * Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
   just raised the bar for easy, resilient and secure K8s cluster deployment.

   https://ubuntu.com/engage/secure-kubernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Tue Feb 25 07:04:09 2025 from 172.29.115.48
hadoopuser@hadoop-namenode:~$ |
```

4. Cek status Name Node dengan mengetikkan perintah **jps**, maka akan ditampilkan status mesin yang sedang bertugas sebagai name node.

```
hadoopuser@hadoop-namenode:~$ jps
2067 ResourceManager
1655 NameNode
21804 Jps
1887 SecondaryNameNode
hadoopuser@hadoop-namenode:~$
```

5. Melihat Status Data Nodes melalui browser dengan mengetikkan alamat:
<http://172.29.247.62:9870/dfshealth.html>

Overview 'hadoop-namenode:9000' (✓active)

Started:	Mon Feb 24 10:24:53 +0700 2025
Version:	3.4.1, 14d7825309348956336b8f06a08322b78422849b1
Compiled:	Wed Oct 09 21:57:00 +0700 2024 by mthakur from branch-3.4.1
Cluster ID:	CID-3e28bd4b-1e31-4764-9300-979d5967571b
Block Pool ID:	BP-187880060-192.168.2.204-1739979975544

Summary

Security is off.
Safemode is off.
21 files and directories, 4 blocks (4 replicated blocks, 0 erasure coded block groups) = 25 total filesystem object(s).
Heap Memory used 163.85 MB of 229.5 MB Heap Memory. Max Heap Memory is 871.5 MB.
Non Heap Memory used 86.13 MB of 88.42 MB Committed Non Heap Memory. Max Non Heap Memory is <unbounded>.

Configured Capacity:	29.23 GB
Configured Remote Capacity:	0 B
DFS Used:	340.39 MB (1.14%)

Lalu klik tab **Datanodes** untuk melihat informasi data node yang ada pada cluster

Datanode Information

Datanode usage histogram

In operation

Node	Http Address	Last contact	Last block report	Used	Non DFS Used	Capacity	Blocks	Block pool used	Block pool used %Dev	Version
✓ default-hadoop-datanode1:9866 (192.168.2.192:9866)	http://hadoop-datanode1:9866	1s	101m	113.48 MB	5.81 GB	9.74 GB (1.14%)	4	113.48 MB (1.14%)	0%	3.4.1
✓ default-hadoop-datanode2:9866 (192.168.2.193:9866)	http://hadoop-datanode2:9866	1s	110m	113.48 MB	5.82 GB	9.74 GB (1.14%)	4	113.48 MB (1.14%)	0%	3.4.1
✓ default-hadoop-datanode3:9866 (192.168.2.192:9866)	http://hadoop-datanode3:9866	1s	287m	113.48 MB	5.82 GB	9.74 GB (1.14%)	4	113.48 MB (1.14%)	0%	3.4.1

- Melihat status pemrosesan MapReduce melalui browser dengan mengetikkan alamat:

<http://172.29.247.62:8088/cluster>

Menjalankan 3 perintah dasar:

- Melihat versi Hadoop

```
hadoopuser@hadoop-namenode:~$ hadoop version
Hadoop 3.4.1
Source code repository https://github.com/apache/hadoop.git -r 4d7825309348956336b8f06a08322b78422849b1
Compiled by mthakur on 2024-10-09T14:57Z
Compiled on platform linux-x86_64
Compiled with protoc 3.23.4
From source with checksum 7292fe9dba5e2e44e3a9f763fce3e680
This command was run using /usr/local/hadoop/share/hadoop/common/hadoop-common-3.4.1.jar
```

- Membuat direktori atau folder. “/” adalah direktori teratas alias root directory. Semua folder yang dibuat harus selalu berada di bawahnya, tidak boleh ada spasi dan disarankan menggunakan CamelCase.

```
hadoopuser@hadoop-namenode:~$ hadoop fs -mkdir /21_TriyanaDewiFatmawati
```

- Melihat direktori atau folder-folder yang ada

```
hadoopuser@hadoop-namenode:~$ hadoop fs -ls /
Found 6 items
drwxr-xr-x - hadoopuser supergroup 0 2025-02-25 07:33 /05_FebbyMatheIda
drwxr-xr-x - hadoopuser supergroup 0 2025-02-25 07:40 /21_TriyanaDewiFatmawati
drwxr-xr-x - hadoopuser supergroup 0 2025-02-24 04:08 /TI-3E
drwxr-xr-x - hadoopuser supergroup 0 2025-02-25 07:39 /TriyanaDewiFatmawati
drwxr-xr-x - hadoopuser supergroup 0 2025-02-25 04:29 /hsycoba
drwxr-xr-x - hadoopuser supergroup 0 2025-02-19 16:50 /yunhasnawa
hadoopuser@hadoop-namenode:~$
```