

Mata kuliah	Big Data
Materi	03. Infrastruktur Big Data Bagian-1 (HDFS)
Nama	Sukma Bagus Wahasdwika
NIM	2241720223
No. Presensi	20
Kelas	TI – 3D

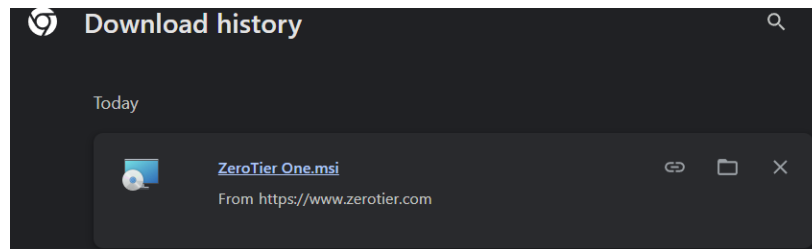
Latihan

• Cobalah untuk:

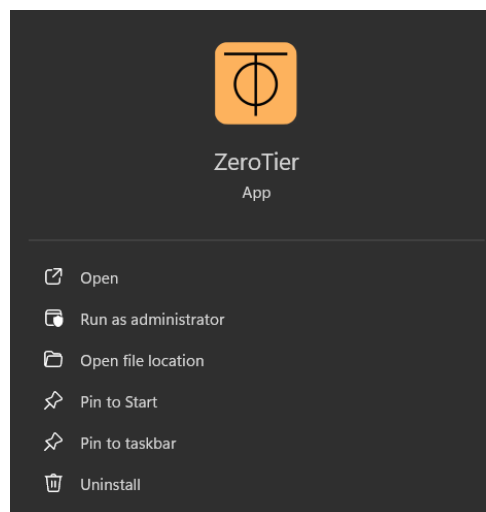
- Terhubung ke cluster Hadoop.
- Jalankan 3 perintah dasar tadi.
- Catatan: Untuk folder yang dibuat, beri nama dengan NoAbsen_NamaAnda.
- Buatlah laporan yang berisi: Screenshot dan penjelasan Langkah-Langkah Anda.

I. Topik-1: Setup HDFS

a. Mendownload VPN ZeroTier dari situs : <https://www.zerotier.com/download/>

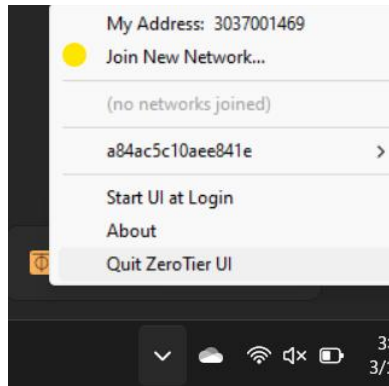


b. Menginstall VPN ZeroTier

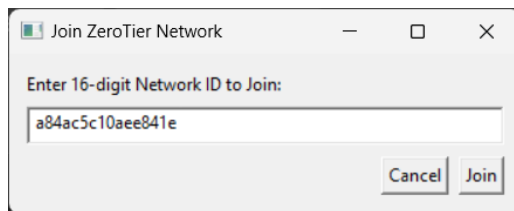


II. Topik-2: Konfigurasi VPN *Client*

- Kunjungi situs ZeroTier berikut jika belum mendapatkan vpn-nya :
<https://www.zerotier.com/download/>
- Buka VPN ZeroTier, untuk bergabung ke jaringan klik Join New Network

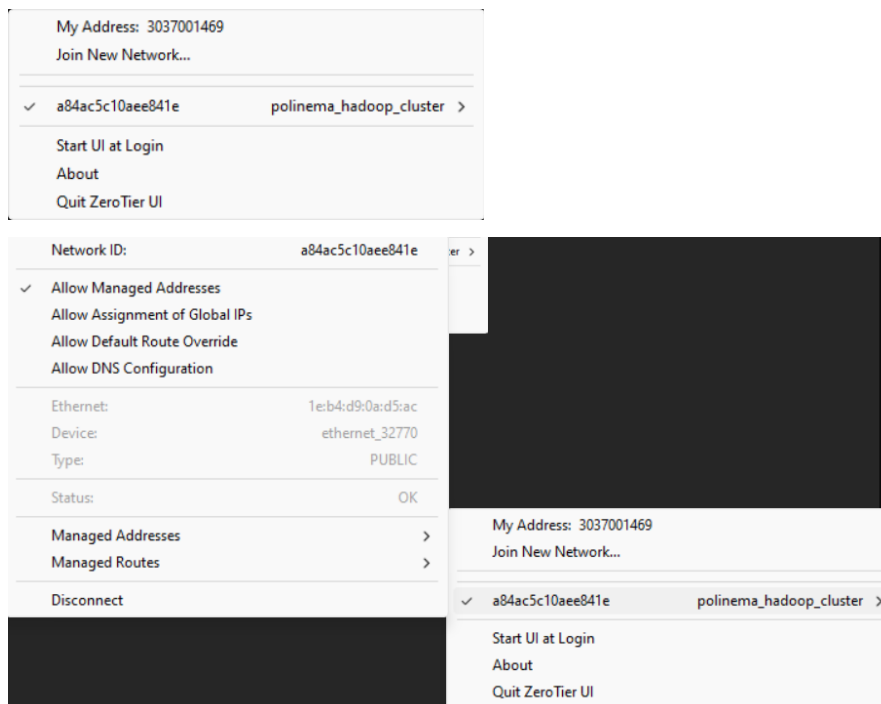


- Bergabung ke jaringan VPN dengan memasukkan Network ID: a84ac5c10aee841e



Klik join

- Pastikan sudah connect seperti berikut



- e. Tes untuk memastikan bahwa sudah terhubung dengan jaringan VPN cluster Hadoop ini, dengan membuka CMD dan ping IP : 172.29.247.62

```
Command Prompt
Microsoft Windows [Version 10.0.22631.4974]
(c) Microsoft Corporation. All rights reserved.

C:\Users\sukma bagus>ping 172.29.247.62

Pinging 172.29.247.62 with 32 bytes of data:
Reply from 172.29.247.62: bytes=32 time=1032ms TTL=64
Reply from 172.29.247.62: bytes=32 time=380ms TTL=64
Reply from 172.29.247.62: bytes=32 time=230ms TTL=64
Reply from 172.29.247.62: bytes=32 time=366ms 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 = 230ms, Maximum = 1032ms, Average = 502ms
```

III. Topik-3: Mengakses *Cluster* Hadoop

- a. Buka **PowerShell**, masukkan perintah
- ssh hadoopuser@172.29.247.62
 - password : **Hadoop**

```
hadoopuser@hadoop-namenode: ~
PS C:\WINDOWS\system32> ssh hadoopuser@172.29.247.62
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 Sat Mar  1 08:37:46 AM UTC 2025

System load:  0.32               Processes:    119
Usage of /:   67.2% of 9.74GB     Users logged in: 1
Memory usage: 33%               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.

1 update can be applied immediately.
To see these additional updates run: apt list --upgradable

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

*** System restart required ***
Last login: Sat Mar  1 05:22:42 2025 from 172.29.98.155
hadoopuser@hadoop-namenode:~$
```

- b. Setelah berhasil terhubung maka nama terminal menjadi
- hadoopuser@hadoop-namenode**

ketik perintah “jps” untuk menampilkan status mesin saat ini yang bertugas sebagai name node.

```
hadoopuser@hadoop-namenode:~$ jps
44194 NameNode
44436 SecondaryNameNode
107719 Jps
44615 ResourceManager
```

- c. Lihat **Status Data Nodes** saat ini melalui GUI Web yang diakses melalui alamat: <http://172.29.247.62:9870/dfshealth.html>

Nameservice Information

Not secure 172.29.247.62:9870/dfshealth.html#tab-overview

Hadoop

Overview

Datanodes

Datanode Volume Failures

Snapshot

Startup Progress

Utilities

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

Started:	Wed Feb 26 13:05:43 +0700 2025
Version:	3.4.1, r4d7825309348956330b8f06a08322b78422849b1
Compiled:	Wed Oct 09 21:57:00 +0700 2024 by mthakur from branch-3.4.1
Cluster ID:	CID-3e28bd4b-1e31-47c4-9300-979d5967571b
Block Pool ID:	BP-1878800960-192.168.2.204-1739979975544

Summary

Security is off.

Safemode is off.

151 files and directories, 43 blocks (43 replicated blocks, 0 erasure coded block groups) = 194 total filesystem object(s).

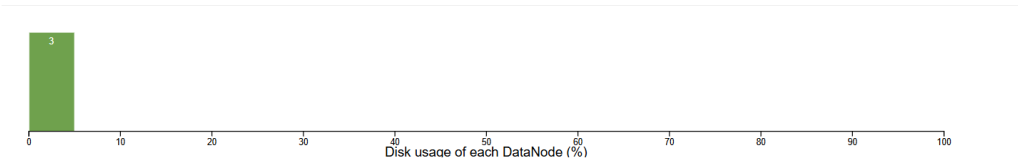
Heap Memory used 65.85 MB of 220 MB Heap Memory. Max Heap Memory is 871.5 MB.

Non Heap Memory used 92.1 MB of 94.48 MB Committed Non Heap Memory. Max Non Heap Memory is <unbounded>.

Configured Capacity:	29.23 GB
Configured Remote Capacity:	0 B
DFS Used:	341.34 MB (1.14%)
Non DFS Used:	18.79 GB

Klik menu Datanodes untuk melihat informasi data node yang ada pada cluster.

Datanode usage histogram



In operation

DataNode State

All

Show

25

entries

Search:

Node	Http Address	Last contact	Last Block Report	Used	Non DFS Used	Capacity	Blocks	Block pool used	Block pool usage StdDev	Version
✓/default-rack/hadoop-datanode1.9866 (192.168.2.152:9866)	http://hadoop-datanode1.9864	0s	83m	113.78 MB	6.24 GB	9.74 GB	43	113.78 MB (1.14%)	0%	3.4.1
✓/default-rack/hadoop-datanode2.9866 (192.168.2.151:9866)	http://hadoop-datanode2.9864	1s	198m	113.78 MB	6.26 GB	9.74 GB	43	113.78 MB (1.14%)	0%	3.4.1
✓/default-rack/hadoop-datanode3.9866 (192.168.2.150:9866)	http://hadoop-datanode3.9864	1s	190m	113.78 MB	6.27 GB	9.74 GB	43	113.78 MB (1.14%)	0%	3.4.1

Showing 1 to 3 of 3 entries

Previous

1

Next

- d. Melihat **Status Pemrosesan Map Reduce** Situs yang sebelumnya terkait dengan penyimpanan data (HDFS) untuk pemrosesan, ada GUI Web yang lain. Anda dapat mengaksesnya melalui browser Anda dengan mengetikkan alamat:

<http://172.29.247.62:8088/cluster>

The screenshot displays the Hadoop All Applications web interface. The interface includes a sidebar with navigation links (Cluster, About, Nodes, Node Labels, Applications, NEW, NEW_SAVING, SUBMITTED, ACCEPTED, RUNNING, FINISHED, FAILED, KILLED, Scheduler, Tools). The main content area shows various metrics:

- Cluster Metrics:** Apps Submitted (0), Apps Pending (0), Apps Running (0), Apps Completed (0), Containers Running (0), Used Resources (<memory:0 B, vCores:0>), <memory:24 G>.
- Cluster Nodes Metrics:** Active Nodes (3), Decommissioning Nodes (0), Decommissioned Nodes (0), Lost Nodes (0).
- Scheduler Metrics:** Scheduler Type (Capacity Scheduler), Scheduling Resource Type (memory-mb (unit-M), vcores), Minimum Allocation (<memory:1024, vCores:1>), Maximum Allocation (<memory:8192, vCores:4>), Maximum Cluster Application F (0).

Below these metrics is a table with columns: ID, User, Name, Application Type, Application Tags, Queue, Application Priority, StartTime, LaunchTime, FinishTime, State, FinalStatus, Running Containers, and Allocated CPU VCore. The table shows 0 entries.

IV. Topik-4: Sedikit Perintah Dasar

- Melihat versi Hadoop

Perintah : **hadoop version** untuk 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 hadoop dengan perintah **hadoop fs -mkdir /<NamaFolder>**.

Tanda '/' untuk folder yang dibuat harus berada dibawahnya.

```
hadoopuser@hadoop-namenode:~$ hadoop fs -mkdir /20_SukmaBagusWahasdwika
```

- Melihat direktori hadoop dengan perintah `hadoop fs -ls /`. Maka akan menampilkan semua isi folder.

```
hadoopuser@hadoop-namenode:~$ hadoop fs -ls /
```

```
drwxr-xr-x  - hadoopuser supergroup          0 2025-03-01 09:04 /20_SukmaBagusWahasdwika
```

```
hadoopuser@hadoop-namenode: ~
```

```
hadoopuser@hadoop-namenode:~$ hadoop fs -ls /
```

Found 25 items

drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-25 07:33	/05_FebbyMathelda
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-28 10:25	/09_MayaMelanesia
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-25 08:04	/10_MochammadZakaroAlFajri
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-25 08:58	/12_MuhammadIrsyadDany
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-27 01:59	/13_Fifi
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-26 03:32	/13_Hanief
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-26 03:33	/13_HaniefMochsin
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-25 08:58	/14NurhalizaAnindyaPutri
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-25 08:56	/15_RhanilhamFadlillatulRamadhan
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-26 08:05	/18_MulkiHakim
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-25 07:53	/18_ShasiaSasaSalsabyla
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-26 07:44	/19_Rendy
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-03-01 09:04	/20_SukmaBagusWahasdwika
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-25 07:40	/21_TriyanaDewiFatmawati
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-26 07:41	/RifkiFakhrudin
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-28 15:08	/SIB-3D
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-28 06:30	/TI-3A
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-26 03:15	/TI-3B
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-24 04:08	/TI-3E
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-26 03:36	/TI_3C
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-25 07:39	/TriyanaDewiFatmawati
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-26 08:24	/asyifa
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-25 04:29	/hsycoba
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-26 08:39	/syifa
drwxr-xr-x	-	hadoopuser	supergroup	0	2025-02-19 16:50	/yunhasnawa