

Tutorial 01

Sabaragamuwa University of Sri Lanka

Faculty of Computing

Department of Software Engineering

SE6103 - Parallel and Distributed Systems

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Index: 19APSE4270

Semester: 3rd Year 2nd Semester

1)

- docker pull bde2020/hadoop-datanode:latest
- docker pull bde2020/hadoop-historyserver

```
PS C:\Users\user> docker pull bde2020/hadoop-historyserver:latest
latest: Pulling from bde2020/hadoop-historyserver
Digest: sha256:216100a96a73717006031ff0c8b72effdc7acffca0a6c647f8820cb7eabc81fd
Status: Image is up to date for bde2020/hadoop-historyserver:latest
docker.io/bde2020/hadoop-historyserver:latest

View a summary of image vulnerabilities and recommendations → docker scout quickview bde2020/hadoop-historyserver:latest
PS C:\Users\user> docker pull bde2020/hadoop-datanode:latest
latest: Pulling from bde2020/hadoop-datanode
Digest: sha256:35f899bcb9f983825a8a3bdc135ed0e8e0eaf3b58f9b08bf257b5e86bae3b47
Status: Image is up to date for bde2020/hadoop-datanode:latest
docker.io/bde2020/hadoop-datanode:latest

What's next:
PS C:\Users\user> docker pull bde2020/hadoop-namenode:latest
Digest: sha256:fd74110805132d646cf6f12635efc0919e1fb2ac5bd376c5366272fc261301e
Status: Image is up to date for bde2020/hadoop-namenode:latest
docker.io/bde2020/hadoop-namenode:latest

What's next:
View a summary of image vulnerabilities and recommendations → docker scout quickview bde2020/hadoop-namenode:latest
```

2)

```
PS C:\Users\user> docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
06198ce8be30	bde2020/hadoop-historyserver:latest	"/entrypoint.sh /run..."	11 minutes ago	Up 11 minutes (healthy)	0.0.0.0:8188->8188/tcp
afd39a9f52db	bde2020/hadoop-datanode:latest	"/entrypoint.sh /run..."	11 minutes ago	Up 11 minutes (healthy)	9864/tcp
fac6053401f6	bde2020/hadoop-namenode:latest	"/entrypoint.sh /run..."	11 minutes ago	Up 11 minutes (healthy)	0.0.0.0:9000->9000/tcp, 0.0.0.0:9870->9870/tcp

3)

```
PS C:\Users\user> docker compose up -d
[+] Running 3/0
✓ Container namenode      Running
✓ Container datanode      Running
✓ Container historyserver Running
```

4)

```
Learn more at https://docs.docker.com/guides/c11/
PS C:\Users\user> docker cp sample.txt namenode:/sample.txt
CreateFile C:\Users\user\sample.txt: The system cannot find the file specified.
PS C:\Users\user> docker cp sample.txt namenode:/sample.txt
Successfully copied 2.05kB to namenode:/sample.txt
```

5)

```
PS C:\Users\user> docker exec -it namenode hdfs dfs -put /sample.txt /input
2024-12-12 16:09:41,963 INFO sasl.SaslDataTransferClient: SASL encryption trust check: localhostTrusted = false, remoteHostTrusted = false

What's next:
Try Docker Debug for seamless, persistent debugging tools in any container or image → docker debug namenode
Learn more at https://docs.docker.com/go/debug-cli/
```

6)

```
PS C:\Users\user> docker exec -it namenode hdfs dfs -put /sample.txt /input
2024-12-12 16:09:41,963 INFO sasl.SaslDataTransferClient: SASL encryption trust check: localhostTrusted = false, remoteHostTrusted = false

What's next:
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Learn more at https://docs.docker.com/go/debug-cli/
PS C:\Users\user> docker exec -it namenode hdfs dfs -ls /input
Found 1 items
-rw-r--r--   3 root supergroup          56 2024-12-12 16:09 /input/sample.txt

What's next:
Try Docker Debug for seamless, persistent debugging tools in any container or image → docker debug namenode
Learn more at https://docs.docker.com/go/debug-cli/
```

7)

```
PS C:\Users\user> docker cp "C:\Users\user\sample.txt" namenode:/sample.txt
Successfully copied 2.05kB to namenode:/sample.txt
PS C:\Users\user> docker exec -it namenode ls
KEYS boot entrypoint.sh hadoop home lib64 mnt proc run sample.txt srv tmp var
bin dev etc hadoop-data lib media opt root run.sh sbin sys usr

What's next:
Try Docker Debug for seamless, persistent debugging tools in any container or image → docker debug namenode
Learn more at https://docs.docker.com/go/debug-cli/
PS C:\Users\user> docker exec -it namenode hdfs dfs -mkdir -p /input

What's next:
Try Docker Debug for seamless, persistent debugging tools in any container or image → docker debug namenode
Learn more at https://docs.docker.com/go/debug-cli/
```

8)

```
PS C:\Users\user> docker exec -it namenode hdfs dfs -ls /input
Found 1 items
-rw-r--r--   3 root supergroup          56 2024-12-12 16:09 /input/sample.txt

What's next:
Try Docker Debug for seamless, persistent debugging tools in any container or image → docker debug namenode
Learn more at https://docs.docker.com/go/debug-cli/
```

9)

```
PS C:\Users\user> docker exec -it namenode hadoop jar /opt/hadoop-3.2.1/share/hadoop/mapreduce/hadoop-mapreduce-examples-3.2.1.jar wordcount /input /output
2024-12-12 16:14:31,333 INFO impl.MetricsConfig: Loaded properties from hadoop-metrics2.properties
2024-12-12 16:14:31,482 INFO impl.MetricsSystemImpl: Scheduled Metric snapshot period at 10 second(s).
2024-12-12 16:14:31,482 INFO impl.MetricsSystemImpl: JobTracker metrics system started
2024-12-12 16:14:31,939 INFO input.FileInputFormat: Total input files to process : 1
2024-12-12 16:14:31,975 INFO mapreduce.JobSubmitter: number of splits:1
2024-12-12 16:14:32,222 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_local1069212232_0001
2024-12-12 16:14:32,222 INFO mapreduce.JobSubmitter: Executing with tokens: []
2024-12-12 16:14:32,441 INFO mapreduce.Job: The url to track the job: http://localhost:8080/
2024-12-12 16:14:32,443 INFO mapreduce.Job: Running job: job_local1069212232_0001
2024-12-12 16:14:32,445 INFO mapred.LocalJobRunner: OutputCommitter set in config null
2024-12-12 16:14:32,459 INFO output.FileOutputCommitter: File Output Committer Algorithm version is 2
2024-12-12 16:14:32,459 INFO output.FileOutputCommitter: FileOutputCommitter skip cleanup _temporary folders under output directory:false, ignore cleanup fail
res: false
2024-12-12 16:14:32,461 INFO mapred.LocalJobRunner: OutputCommitter is org.apache.hadoop.mapreduce.lib.output.FileOutputCommitter
2024-12-12 16:14:32,516 INFO mapred.LocalJobRunner: Waiting for map tasks
2024-12-12 16:14:32,517 INFO mapred.LocalJobRunner: Starting task: attempt_local1069212232_0001_m_0000000_0
2024-12-12 16:14:32,548 INFO output.FileOutputCommitter: File Output Committer Algorithm version is 2
```

10)

```
Combine Input records=9
Combine output records=9
Reduce input groups=9
Reduce shuffle bytes=115
Reduce input records=9
Reduce output records=9
Spilled Records=18
Shuffled Maps =1
Failed Shuffles=0
Merged Map outputs=1
GC time elapsed (ms)=36
Total committed heap usage (bytes)=540016640

Shuffle Errors
BAD_ID=0
CONNECTION=0
IO_ERROR=0
WRONG_LENGTH=0
WRONG_MAP=0
WRONG_REDUCE=0

File Input Format Counters
Bytes Read=56
File Output Format Counters
Bytes Written=73

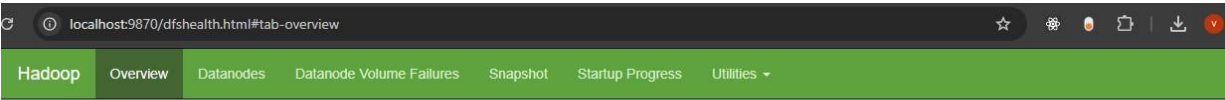
What's next:
Try Docker Debug for seamless, persistent debugging tools in any container or image → docker debug namenode
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```

11)

```
PS C:\Users\user> docker exec -it namenode hdfs dfs -cat /output/part-r-00000
2024-12-12 16:15:37,498 INFO sasl.SaslDataTransferClient: SASL encryption trust check: localhostTrusted = false, remoteHostTrusted = false
2
1
assignment      1
hadoop          1
hadoop.         1
important       1
is              1
most            1
test            1
the             1

What's next:
Try Docker Debug for seamless, persistent debugging tools in any container or image → docker debug namenode
Learn more at https://docs.docker.com/go/debug-cli/
```

12)



Overview 'namenode:8020' (active)

Started:	Thu Dec 12 21:23:17 +0530 2024
Version:	3.2.1, rb3cbbb467e22ea829b3808f4b7b01d07e0bf3842
Compiled:	Tue Sep 10 21:26:00 +0530 2019 by rohithsharmaks from branch-3.2.1
Cluster ID:	CID-7a5a339f-82f3-4b2e-8bbc-edcc679090cf
Block Pool ID:	BP-554955200-172.18.0.2-1734018794612

Summary

Security is off.
Safemode is off.
6 files and directories, 2 blocks (2 replicated blocks, 0 erasure coded block groups) = 8 total filesystem object(s).
Heap Memory used 106.23 MB of 274.5 MB Heap Memory. Max Heap Memory is 850 MB.

13)

