Atsisiunčiau minimalią („bare-bones“) Debian WSL distribuciją į „Windows 10“ kompiuterį.

Kadangi distribucija bare-bones, reikia paleisti `sudo apt dist-upgrade`, `sudo apt-get install man-db` ir `sudo apt-get update`.

```
user@DESKTOP-L5PHPUN:~$ uname -a
Linux DESKTOP-L5PHPUN 4.4.0-19041-Microsoft #4355-Microsoft Thu Apr 12 17:37:00
PST 2024 x86_64 GNU/Linux
user@DESKTOP-L5PHPUN:~$ sudo apt dist-upgrade
[sudo] password for user:
Reading package lists... Done
Building dependency tree... Done
Calculating upgrade... Done
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
user@DESKTOP-L5PHPUN:~$ sudo apt-get install man-db
Reading package lists... Done
Building dependency tree... Done
The following additional packages will be installed:
  bsdextrautils groff-base libgdbm6 libpipeline1 libuchardet0
Suggested packages:
  groff gdbm-l10n apparmor www-browser
The following NEW packages will be installed:
  bsdextrautils groff-base libgdbm6 libpipeline1 libuchardet0 man-db
0 upgraded, 6 newly installed, 0 to remove and 0 not upgraded.
Need to get 2,567 kB of archives.
After this operation, 7,584 kB of additional disk space will be used.
Do you want to continue? [Y/n]
Get:1 http://deb.debian.org/debian bookworm/main amd64 libuchardet0 amd64 0.0.7-1
[67.8 kB]
Get:2 http://deb.debian.org/debian bookworm/main amd64 groff-base amd64 1.22.4-10
[916 kB]
Get:3 http://deb.debian.org/debian bookworm/main amd64 bsdextrautils amd64 2.38.1-
5+deb12u3 [87.0 kB]
Get:4 http://deb.debian.org/debian bookworm/main amd64 libgdbm6 amd64 1.23-3 [72.2
kB]
Get:5 http://deb.debian.org/debian bookworm/main amd64 libpipeline1 amd64 1.5.7-1
[38.5 kB]
Get:6 http://deb.debian.org/debian bookworm/main amd64 man-db amd64 2.11.2-2
[1,386 kB]
Fetched 2,567 kB in 1s (2,681 kB/s)
Preconfiguring packages ...
Selecting previously unselected package libuchardet0:amd64.
(Reading database ... 9629 files and directories currently installed.)
Preparing to unpack .../0-libuchardet0_0.0.7-1_amd64.deb ...
Unpacking libuchardet0:amd64 (0.0.7-1) ...
Selecting previously unselected package groff-base.
Preparing to unpack .../1-groff-base_1.22.4-10_amd64.deb ...
```

```
Unpacking groff-base (1.22.4-10) ...
Selecting previously unselected package bsdextrautils.
Preparing to unpack .../2-bsdextrautils_2.38.1-5+deb12u3_amd64.deb ...
Unpacking bsdextrautils (2.38.1-5+deb12u3) ...
Selecting previously unselected package libgdbm6:amd64.
Preparing to unpack .../3-libgdbm6_1.23-3_amd64.deb ...
Unpacking libgdbm6:amd64 (1.23-3) ...
Selecting previously unselected package libpipeline1:amd64.
Preparing to unpack .../4-libpipeline1_1.5.7-1_amd64.deb ...
Unpacking libpipeline1:amd64 (1.5.7-1) ...
Selecting previously unselected package man-db.
Preparing to unpack .../5-man-db_2.11.2-2_amd64.deb ...
Unpacking man-db (2.11.2-2) ...
Setting up libpipeline1:amd64 (1.5.7-1) ...
Setting up bsdextrautils (2.38.1-5+deb12u3) ...
Setting up libuchardet0:amd64 (0.0.7-1) ...
Setting up libgdbm6:amd64 (1.23-3) ...
Setting up groff-base (1.22.4-10) ...
Setting up man-db (2.11.2-2) ...
Building database of manual pages ...
Created symlink /etc/systemd/system/timers.target.wants/man-db.timer →
/lib/systemd/system/man-db.timer.
Processing triggers for libc-bin (2.36-9+deb12u9) ...
user@DESKTOP-L5PHPUN:~$ sudo apt-get update
Get:1 http://security.debian.org/debian-security bookworm-security InRelease [48.0
kB]
Get:2 http://deb.debian.org/debian bookworm InRelease [151 kB]
Get:3 http://ftp.debian.org/debian bookworm-backports InRelease [59.4 kB]
Get:4 http://deb.debian.org/debian bookworm-updates InRelease [55.4 kB]
Get:5 http://security.debian.org/debian-security bookworm-security/main amd64
Packages [260 kB]
Get:6 http://security.debian.org/debian-security bookworm-security/main
Translation-en [156 kB]
Get:7 http://ftp.debian.org/debian bookworm-backports/main amd64 Packages [273 kB]
Get:8 http://ftp.debian.org/debian bookworm-backports/main Translation-en [232 kB]
Get:9 http://deb.debian.org/debian bookworm/main amd64 Packages [8,792 kB]
Get:10 http://deb.debian.org/debian bookworm/main Translation-en [6,109 kB]
Get:11 http://deb.debian.org/debian bookworm-updates/main amd64 Packages [512 B]
Get:12 http://deb.debian.org/debian bookworm-updates/main Translation-en [360 B]
Fetched 16.1 MB in 6s (2,486 kB/s)
Reading package lists... Done
N: Repository 'http://deb.debian.org/debian bookworm InRelease' changed its
'Version' value from '12.9' to '12.10'
user@DESKTOP-L5PHPUN:~$
```

Kadangi naudoju minimalų Debian installationa, pagal nutylėjimą nėra Java 8 ar Java 11, nes tiesiog defaultinese repos, jog neegzistuoja, ber yra JRE 17, tai bandžiau laime su juo.

```
user@DESKTOP-L5PHPUN:~$ sudo apt install openjdk-17-jre-headless
user@DESKTOP-L5PHPUN:~$ java --version
openjdk 17.0.14 2025-01-21
OpenJDK Runtime Environment (build 17.0.14+7-Debian-1deb12u1)
OpenJDK 64-Bit Server VM (build 17.0.14+7-Debian-1deb12u1, mixed mode, sharing)
user@DESKTOP-L5PHPUN:~$
```

Susikūriau Hadoop vartotoją.

```
user@DESKTOP-L5PHPUN:~$ sudo adduser --gecos "" hadoop
Adding user `hadoop' ...
Adding new group `hadoop' (1001) ...
Adding new user `hadoop' (1001) with group `hadoop (1001)' ...
Creating home directory `/home/hadoop' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Adding new user `hadoop' to supplemental / extra groups `users' ...
Adding user `hadoop' to group `users' ...
user@DESKTOP-L5PHPUN:~$
```

Kadangi minimalioje Debian diegimo versijoje nebuvo `wget`, teko jį taippat įdiegti.

```
user@DESKTOP-L5PHPUN:~$ sudo apt install wget
```

Parsiunčiau Hadoop'ą, įkėliau jį į nurodytą direktoriją pagal gidą „how to install hadoop in linux“, tačiau anksčiau sukurtas Hadoop vartotojas neturėjo root teisių, tai teko suteikti jam sudo prieigą.

```
hadoop@DESKTOP-L5PHPUN:~$ wget https://archive.apache.org/dist/hadoop/core/hadoop-
3.3.0/hadoop-3.3.0.tar.gz
hadoop@DESKTOP-L5PHPUN:~$ tar -xzf hadoop-3.3.0.tar.gz
hadoop@DESKTOP-L5PHPUN:~$ sudo mv hadoop-3.3.0 /usr/local/hadoop
[sudo] password for hadoop:
hadoop is not in the sudoers file.
```

```
hadoop@DESKTOP-L5PHPUN:~$ exit
logout
user@DESKTOP-L5PHPUN:~$ sudo usermod -aG sudo hadoop
user@DESKTOP-L5PHPUN:~$ sudo su - hadoop
hadoop@DESKTOP-L5PHPUN:~$ sudo mv hadoop-3.3.0 /usr/local/hadoop
[sudo] password for hadoop:
hadoop@DESKTOP-L5PHPUN:~$
```

Sukonfigūravau visus export'us per `nano` ir išsourcinau viską su `source ~/.bashrc`.

```
# Hadoop exports
export HADOOP_HOME=/usr/local/hadoop
export PATH=$PATH:$HADOOP_HOME/bin:$HADOOP_HOME/sbin
export JAVA_HOME=/usr/lib/jvm/java-17-openjdk-amd64/bin/java
export PATH=$JAVA_HOME/bin:$PATH
```

Sukonfigūravau `core-site.xml`.

```
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-->

<!-- Put site-specific property overrides in this file. -->

<configuration>
  <property>
    <name>fs.defaultFS</name>
    <value>hdfs://localhost:9000</value>
  </property>
  <property>
    <name>hadoop.tmp.dir</name>
    <value>/app/hadoop/tmp</value>
  </property>
</configuration>
```

Sukonfigūravau `hdfs-site.xml`.

```
  GNU nano 7.2                              /usr/local/hadoop/etc/hadoop/hdfs-
site.xml *                                      <?xml version="1.0" encoding="UTF-8"?
>
<?xml-stylesheet type="text/xsl" href="configuration.xsl"?>
<!--
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  WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
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  limitations under the License. See accompanying LICENSE file.
-->

<!-- Put site-specific property overrides in this file. -->

<configuration>
  <property>
    <name>dfs.replication</name>
    <value>1</value>
  </property>
</configuration>
```

Sukonfigūravau `mapred-site.xml`.

```
  GNU nano 7.2                             /usr/local/hadoop/etc/hadoop/mapred-
site.xml *                                   <?xml version="1.0"?>
<?xml-stylesheet type="text/xsl" href="configuration.xsl"?>
<!--
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  WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
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  limitations under the License. See accompanying LICENSE file.
-->

<!-- Put site-specific property overrides in this file. -->
```

```
<configuration>
  <property>
    <name>mapreduce.framework.name</name>
    <value>yarn</value>
  </property>
</configuration>
```

Sukonfigūravau `yarn-site.xml`.

```
  GNU nano 7.2                              /usr/local/hadoop/etc/hadoop/yarn-
site.xml *                                      <?xml version="1.0"?>
<!--
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  WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
  See the License for the specific language governing permissions and
  limitations under the License. See accompanying LICENSE file.
-->
<configuration>
  <property>
    <name>yarn.nodemanager.aux-services</name>
    <value>mapreduce_shuffle</value>
  </property>
</configuration>
```

Paaiškėjo, kad buvau neteisingai nustatęs `JAVA_HOME`.

```
hadoop@DESKTOP-L5PHPUN:~$ hdfs namenode -format
ERROR: JAVA_HOME /usr/lib/jvm/java-17-openjdk-amd64/bin/java does not exist.
```

Pataisiau `.bashrc`, kad atspindėtų:

```
# Hadoop exports
export HADOOP_HOME=/usr/local/hadoop
export PATH=$PATH:$HADOOP_HOME/bin:$HADOOP_HOME/sbin
export JAVA_HOME=/usr/lib/jvm/java-17-openjdk-amd64
export PATH=$JAVA_HOME/bin:$PATH
```

Paleidus `hdfs namenode -format` gavau Java exception'ą: (pilno log'o nepateikiu dėl dydžio)

```
java.io.IOException: Cannot create directory /app/hadoop/tmp/dfs/name/current
        at
org.apache.hadoop.hdfs.server.common.Storage$StorageDirectory.clearDirectory(Stora
ge.java:447)
        at
org.apache.hadoop.hdfs.server.namenode.NNStorage.format(NNStorage.java:591)
        at
org.apache.hadoop.hdfs.server.namenode.NNStorage.format(NNStorage.java:613)
        at org.apache.hadoop.hdfs.server.namenode.FSImage.format(FSImage.java:188)
        at
org.apache.hadoop.hdfs.server.namenode.NameNode.format(NameNode.java:1271)
        at
org.apache.hadoop.hdfs.server.namenode.NameNode.createNameNode(NameNode.java:1713)
        at
org.apache.hadoop.hdfs.server.namenode.NameNode.main(NameNode.java:1821)
2025-04-26 22:24:21,326 ERROR namenode.NameNode: Failed to start namenode.
java.io.IOException: Cannot create directory /app/hadoop/tmp/dfs/name/current
        at
org.apache.hadoop.hdfs.server.common.Storage$StorageDirectory.clearDirectory(Stora
ge.java:447)
        at
org.apache.hadoop.hdfs.server.namenode.NNStorage.format(NNStorage.java:591)
        at
org.apache.hadoop.hdfs.server.namenode.NNStorage.format(NNStorage.java:613)
        at org.apache.hadoop.hdfs.server.namenode.FSImage.format(FSImage.java:188)
        at
org.apache.hadoop.hdfs.server.namenode.NameNode.format(NameNode.java:1271)
        at
org.apache.hadoop.hdfs.server.namenode.NameNode.createNameNode(NameNode.java:1713)
        at
org.apache.hadoop.hdfs.server.namenode.NameNode.main(NameNode.java:1821)
2025-04-26 22:24:21,327 INFO util.ExitUtil: Exiting with status 1:
java.io.IOException: Cannot create directory /app/hadoop/tmp/dfs/name/current
2025-04-26 22:24:21,328 INFO namenode.NameNode: SHUTDOWN_MSG:
/************************************************************
SHUTDOWN_MSG: Shutting down NameNode at DESKTOP-L5PHPUN/127.0.1.1
************************************************************/
```

Pagrinde, erroras sako, kad negali sukurti reikiamos direktorijos, spėju dėl to nes neturo sudo access.

Rankiniu būdu sukūriau reikiamą dir'a, suteikiau `hadoop` sudo prieigą.

```
sudo mkdir -p /app/hadoop/tmp/dfs/name/current
sudo chown -R hadoop:hadoop /app/hadoop
```

```
sudo chmod -R 755 /app/hadoop
```

Paleidau programą iš naujo. Viskas veikia kaip tikėtasi.

```
STARTUP_MSG:   build = https://gitbox.apache.org/repos/asf/hadoop.git -r
aa96f1871bfd858f9bac59cf2a81ec470da649af; compiled by 'brahma' on 2020-07-
06T18:44Z
STARTUP_MSG:   java = 17.0.14
************************************************************/
2025-04-26 22:28:17,579 INFO namenode.NameNode: registered UNIX signal handlers
for [TERM, HUP, INT]
2025-04-26 22:28:17,636 INFO namenode.NameNode: createNameNode [-format]
2025-04-26 22:28:17,890 INFO namenode.NameNode: Formatting using clusterid: CID-
b5e6e1e6-2786-4189-9633-2b31a78ce8c7
2025-04-26 22:28:17,911 INFO namenode.FSEditLog: Edit logging is async:true
2025-04-26 22:28:17,927 INFO namenode.FSNamesystem: KeyProvider: null
2025-04-26 22:28:17,928 INFO namenode.FSNamesystem: fsLock is fair: true
2025-04-26 22:28:17,928 INFO namenode.FSNamesystem: Detailed lock hold time
metrics enabled: false
2025-04-26 22:28:17,942 INFO namenode.FSNamesystem: fsOwner                =
hadoop (auth:SIMPLE)
2025-04-26 22:28:17,942 INFO namenode.FSNamesystem: supergroup             =
supergroup
2025-04-26 22:28:17,942 INFO namenode.FSNamesystem: isPermissionEnabled    = true
2025-04-26 22:28:17,942 INFO namenode.FSNamesystem: isStoragePolicyEnabled = true
2025-04-26 22:28:17,966 INFO common.Util:
dfs.datanode.fileio.profiling.sampling.percentage set to 0. Disabling file IO
profiling
2025-04-26 22:28:17,972 INFO blockmanagement.DatanodeManager:
dfs.block.invalidate.limit: configured=1000, counted=60, effected=1000
2025-04-26 22:28:17,972 INFO blockmanagement.DatanodeManager:
dfs.namenode.datanode.registration.ip-hostname-check=true
2025-04-26 22:28:17,975 INFO blockmanagement.BlockManager:
dfs.namenode.startup.delay.block.deletion.sec is set to 000:00:00:00.000
2025-04-26 22:28:17,975 INFO blockmanagement.BlockManager: The block deletion will
start around 2025 Apr 26 22:28:17
2025-04-26 22:28:17,976 INFO util.GSet: Computing capacity for map BlocksMap
2025-04-26 22:28:17,976 INFO util.GSet: VM type       = 64-bit
2025-04-26 22:28:17,976 INFO util.GSet: 2.0% max memory 4.0 GB = 81.4 MB
2025-04-26 22:28:17,976 INFO util.GSet: capacity      = 2^23 = 8388608 entries
2025-04-26 22:28:18,001 INFO blockmanagement.BlockManager: Storage policy
satisfier is disabled
2025-04-26 22:28:18,001 INFO blockmanagement.BlockManager:
dfs.block.access.token.enable = false
2025-04-26 22:28:18,004 INFO blockmanagement.BlockManagerSafeMode:
dfs.namenode.safemode.threshold-pct = 0.999
2025-04-26 22:28:18,004 INFO blockmanagement.BlockManagerSafeMode:
dfs.namenode.safemode.min.datanodes = 0
2025-04-26 22:28:18,004 INFO blockmanagement.BlockManagerSafeMode:
dfs.namenode.safemode.extension = 30000
```

```
2025-04-26 22:28:18,005 INFO blockmanagement.BlockManager: defaultReplication
= 1
2025-04-26 22:28:18,005 INFO blockmanagement.BlockManager: maxReplication
= 512
2025-04-26 22:28:18,005 INFO blockmanagement.BlockManager: minReplication
= 1
2025-04-26 22:28:18,005 INFO blockmanagement.BlockManager: maxReplicationStreams
= 2
2025-04-26 22:28:18,005 INFO blockmanagement.BlockManager:
redundancyRecheckInterval  = 3000ms
2025-04-26 22:28:18,005 INFO blockmanagement.BlockManager: encryptDataTransfer
= false
2025-04-26 22:28:18,005 INFO blockmanagement.BlockManager: maxNumBlocksToLog
= 1000
2025-04-26 22:28:18,017 INFO namenode.FSDirectory: GLOBAL serial map: bits=29
maxEntries=536870911
2025-04-26 22:28:18,017 INFO namenode.FSDirectory: USER serial map: bits=24
maxEntries=16777215
2025-04-26 22:28:18,017 INFO namenode.FSDirectory: GROUP serial map: bits=24
maxEntries=16777215
2025-04-26 22:28:18,017 INFO namenode.FSDirectory: XATTR serial map: bits=24
maxEntries=16777215
2025-04-26 22:28:18,024 INFO util.GSet: Computing capacity for map INodeMap
2025-04-26 22:28:18,024 INFO util.GSet: VM type       = 64-bit
2025-04-26 22:28:18,024 INFO util.GSet: 1.0% max memory 4.0 GB = 40.7 MB
2025-04-26 22:28:18,024 INFO util.GSet: capacity      = 2^22 = 4194304 entries
2025-04-26 22:28:18,034 INFO namenode.FSDirectory: ACLs enabled? true
2025-04-26 22:28:18,034 INFO namenode.FSDirectory: POSIX ACL inheritance enabled?
true
2025-04-26 22:28:18,034 INFO namenode.FSDirectory: XAttrs enabled? true
2025-04-26 22:28:18,034 INFO namenode.NameNode: Caching file names occurring more
than 10 times
2025-04-26 22:28:18,037 INFO snapshot.SnapshotManager: Loaded config
captureOpenFiles: false, skipCaptureAccessTimeOnlyChange: false,
snapshotDiffAllowSnapRootDescendant: true, maxSnapshotLimit: 65536
2025-04-26 22:28:18,038 INFO snapshot.SnapshotManager: SkipList is disabled
2025-04-26 22:28:18,040 INFO util.GSet: Computing capacity for map cachedBlocks
2025-04-26 22:28:18,040 INFO util.GSet: VM type       = 64-bit
2025-04-26 22:28:18,041 INFO util.GSet: 0.25% max memory 4.0 GB = 10.2 MB
2025-04-26 22:28:18,041 INFO util.GSet: capacity      = 2^20 = 1048576 entries
2025-04-26 22:28:18,047 INFO metrics.TopMetrics: NNTop conf:
dfs.namenode.top.window.num.buckets = 10
2025-04-26 22:28:18,047 INFO metrics.TopMetrics: NNTop conf:
dfs.namenode.top.num.users = 10
2025-04-26 22:28:18,047 INFO metrics.TopMetrics: NNTop conf:
dfs.namenode.top.windows.minutes = 1,5,25
2025-04-26 22:28:18,050 INFO namenode.FSNamesystem: Retry cache on namenode is
enabled
2025-04-26 22:28:18,050 INFO namenode.FSNamesystem: Retry cache will use 0.03 of
total heap and retry cache entry expiry time is 600000 millis
2025-04-26 22:28:18,051 INFO util.GSet: Computing capacity for map
NameNodeRetryCache
2025-04-26 22:28:18,051 INFO util.GSet: VM type       = 64-bit
2025-04-26 22:28:18,051 INFO util.GSet: 0.029999999329447746% max memory 4.0 GB =
```

```
1.2 MB
2025-04-26 22:28:18,051 INFO util.GSet: capacity      = 2^17 = 131072 entries
2025-04-26 22:28:18,069 INFO namenode.FSImage: Allocated new BlockPoolId: BP-
1471155821-127.0.1.1-1745695698065
2025-04-26 22:28:18,083 INFO common.Storage: Storage directory
/app/hadoop/tmp/dfs/name has been successfully formatted.
2025-04-26 22:28:18,100 INFO namenode.FSImageFormatProtobuf: Saving image file
/app/hadoop/tmp/dfs/name/current/fsimage.ckpt_0000000000000000000 using no
compression
2025-04-26 22:28:18,163 INFO namenode.FSImageFormatProtobuf: Image file
/app/hadoop/tmp/dfs/name/current/fsimage.ckpt_0000000000000000000 of size 401
bytes saved in 0 seconds .
2025-04-26 22:28:18,171 INFO namenode.NNStorageRetentionManager: Going to retain 1
images with txid >= 0
2025-04-26 22:28:18,174 INFO namenode.FSImage: FSImageSaver clean checkpoint:
txid=0 when meet shutdown.
2025-04-26 22:28:18,175 INFO namenode.NameNode: SHUTDOWN_MSG:
/************************************************************
SHUTDOWN_MSG: Shutting down NameNode at DESKTOP-L5PHPUN/127.0.1.1
************************************************************/
hadoop@DESKTOP-L5PHPUN:~$
```

Nuėjęs į `/usr/local/hadoop/sbin`, paleidau `start-dfs.sh` ir gavau klaidą dėl `ssh`:

```
hadoop@DESKTOP-L5PHPUN:/usr/local/hadoop/sbin$ start-dfs.sh
Starting namenodes on [localhost]
localhost: /usr/local/hadoop/libexec/hadoop-functions.sh: line 987: ssh: command
not found
Starting datanodes
localhost: /usr/local/hadoop/libexec/hadoop-functions.sh: line 987: ssh: command
not found
Starting secondary namenodes [DESKTOP-L5PHPUN]
DESKTOP-L5PHPUN: /usr/local/hadoop/libexec/hadoop-functions.sh: line 987: ssh:
command not found
hadoop@DESKTOP-L5PHPUN:/usr/local/hadoop/sbin$
```

Kadangi viską atlikau ant minimal WSL DEB installationu, tai jis praktiškai jokių binarikų neturi, įskaitant ir `openssh`, tai teko susiinstaliuot ir jį.

Įdiegiau `openssh-client` ir `openssh-server` ir paleidau SSH serverį.

```
```

```
hadoop@DESKTOP-L5PHPUN:/usr/local/hadoop/sbin$ sudo service ssh start
Starting OpenBSD Secure Shell server: sshd.
hadoop@DESKTOP-L5PHPUN:/usr/local/hadoop/sbin$ sudo service ssh status
sshd is running.
hadoop@DESKTOP-L5PHPUN:/usr/local/hadoop/sbin$
```

Paleidęs `.sh` failus iš naujo, gavau klaidą dėl passwordu:

```
hadoop@DESKTOP-L5PHPUN:/usr/local/hadoop/sbin$ start-dfs.sh
Starting namenodes on [localhost]
localhost: Warning: Permanently added 'localhost' (ED25519) to the list of known
hosts.
localhost: hadoop@localhost: Permission denied (publickey,password).
Starting datanodes
localhost: hadoop@localhost: Permission denied (publickey,password).
Starting secondary namenodes [DESKTOP-L5PHPUN]
DESKTOP-L5PHPUN: Warning: Permanently added 'desktop-l5phpun' (ED25519) to the
list of known hosts.
DESKTOP-L5PHPUN: hadoop@desktop-l5phpun: Permission denied (publickey,password).
hadoop@DESKTOP-L5PHPUN:/usr/local/hadoop/sbin$
```

Pagrinde, tiesiog parsiuntes openssh pamiršau sutvarkyti visus raktus...

Pasidariau passwordless SSH:

```
hadoop@DESKTOP-L5PHPUN:/usr/local/hadoop/sbin$ ssh-keygen -t rsa -P "" -f
~/.ssh/id_rsa
Generating public/private rsa key pair.
Your identification has been saved in /home/hadoop/.ssh/id_rsa
Your public key has been saved in /home/hadoop/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:jMo4T4nTHDgy6jZc9rqCAlNRNPVpv0z8EK/IlMuMu9g hadoop@DESKTOP-L5PHPUN
The key's randomart image is:
+---[RSA 3072]----+
|   o+..          |
|  .  . . .       |
|   .    + .      |
|  ..   + + o     |
|o.o . . S = .    |
|+o X + * = =     |
|=.B O . * + .    |
|+= = + .         |
|o.oo= E.         |
+----[SHA256]-----+
```

```
hadoop@DESKTOP-L5PHPUN:/usr/local/hadoop/sbin$ cat ~/.ssh/id_rsa.pub >>
~/.ssh/authorized_keys
hadoop@DESKTOP-L5PHPUN:/usr/local/hadoop/sbin$ chmod 600 ~/.ssh/authorized_keys
hadoop@DESKTOP-L5PHPUN:/usr/local/hadoop/sbin$ chmod 700 ~/.ssh
hadoop@DESKTOP-L5PHPUN:/usr/local/hadoop/sbin$ ssh localhost
Linux DESKTOP-L5PHPUN 4.4.0-19041-Microsoft #4355-Microsoft Thu Apr 12 17:37:00
PST 2024 x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for these programs are described in
the individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
hadoop@DESKTOP-L5PHPUN:~$
```

Paleidau `.sh` failus iš naujo – jokių klaidų nebeliko:

```
hadoop@DESKTOP-L5PHPUN:~$ cd /usr/local/hadoop/sbin
hadoop@DESKTOP-L5PHPUN:/usr/local/hadoop/sbin$ start-dfs.sh
Starting namenodes on [localhost]
Starting datanodes
Starting secondary namenodes [DESKTOP-L5PHPUN]
hadoop@DESKTOP-L5PHPUN:/usr/local/hadoop/sbin$ start-yarn.sh
Starting resourcemanager
Starting nodemanagers
hadoop@DESKTOP-L5PHPUN:/usr/local/hadoop/sbin$
```

Bandžiau patikrinti `jps`, bet ankščiau buvau įdiegęs headless JRE (nepagalvojau, kad jis neturės `jps`).

```
hadoop@DESKTOP-L5PHPUN:/usr/local/hadoop/sbin$ jps
-bash: jps: command not found
```

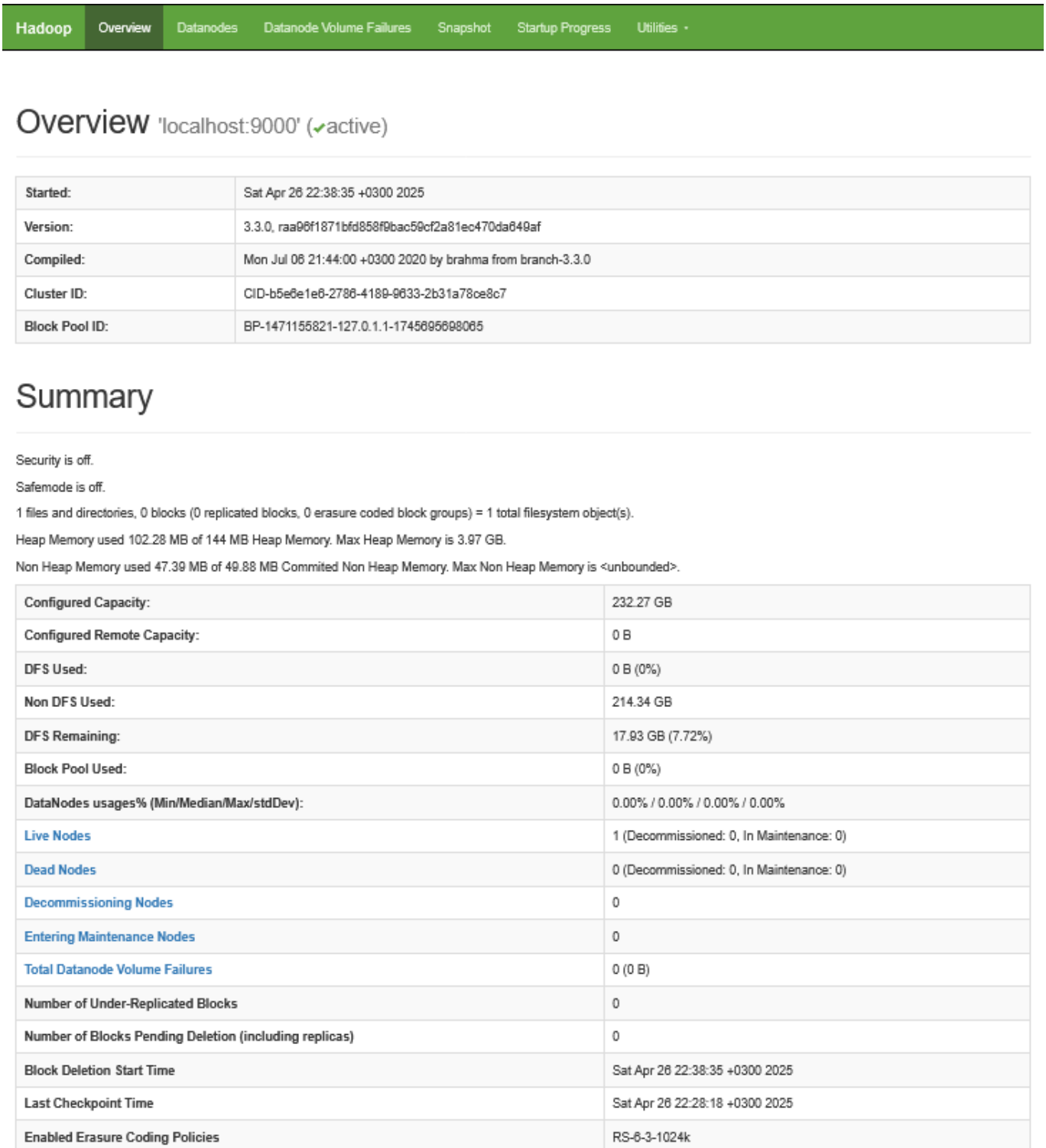
Įsidiegiau pilna JAVA_17

```
hadoop@DESKTOP-L5PHPUN:/usr/local/hadoop/sbin$ sudo apt install openjdk-17-jdk
```

Įdiegus pilną Java, paleidau `jps`:

```
hadoop@DESKTOP-L5PHPUN:/usr/local/hadoop/sbin$ jps
6032 DataNode
6213 SecondaryNameNode
5894 NameNode
8089 Jps
```

Nuvykus http://localhost:9870/, iškart routino į http://localhost:9870/dfshealth.html#tab-overview ir gavau tokį vaizdą:



NameNode Journal Status

Current transaction ID: 1

Journal Manager	State
FileJournalManager(root=/app/hadoop/tmp/dfs/name)	EditLogFileOutputStream(/app/hadoop/tmp/dfs/name/current/edits_inprogress_0000000000000000001)

NameNode Storage

Storage Directory	Type	State
/app/hadoop/tmp/dfs/name	IMAGE_AND_EDITS	Active

DFS Storage Types

Storage Type	Configured Capacity	Capacity Used	Capacity Remaining	Block Pool Used	Nodes In Service
DISK	232.27 GB	0	17.93 GB (7.72%)		1