



## **Backup & Restore Guide**

NEMO 5.0

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## 1 Introduction

This document outlines the procedures for backing up and restoring a Nemo deployment. Regular backups protect against data loss, corruption, and other unforeseen issues, while a well-defined restore process ensures that you can quickly recover and resume operations in the event of a failure.

By following the procedures outlined in this document, you can safeguard your data, minimize downtime, and ensure that your Nemo application remains a robust and dependable component of your voice network.

## 2 Overview

The Nemo application is located under `/opt/nemo/` with configuration files in `/opt/nemo/etc/`. It relies on MongoDB database, whose data files are located under `/data/db/`. For central servers, it is mandatory to backup both the database and the application.

## 3 Backup Procedure

1. Ensure the database is running and check with `systemctl status mongod`:

```
1 [root@nemo-server ~]# systemctl status mongod
2 * mongod.service - High-performance, schema-free document-oriented database
3   Loaded: loaded (/usr/lib/systemd/system/mongod.service; enabled; vendor
4     ↪ preset: disabled)
5   Active: active (running) since Thu 2024-04-18 15:43:14 CEST; 2 months 23
6     ↪ days ago
7     Docs: https://docs.mongodb.org/manual
8   Main PID: 1249 (mongod)
```

```
7 CGroup: /system.slice/mongod.service
8    ^-1249 /usr/bin/mongod -f /etc/mongod.conf
```

2. Stop the Nemo application with `systemctl stop nemo`.
3. Ensure that the application is not running anymore with `systemctl status nemo`:

```
1 [root@nemo-server ~]# systemctl status nemo
2 * nemo.service - SYSV: Nemo GUI
3   Loaded: loaded (/etc/rc.d/init.d/nemo; bad; vendor preset: disabled)
4   Active: inactive (dead) since Thu 2024-07-11 15:07:25 CEST; 54s ago
5     Docs: man:systemd-sysv-generator(8)
6   Process: 21026 ExecStop=/etc/rc.d/init.d/nemo stop (code=exited, status=0/
7     ↪ SUCCESS)
8   Process: 20486 ExecStart=/etc/rc.d/init.d/nemo start (code=exited, status=0/
9     ↪ SUCCESS)
```

4. Navigate to a directory with enough space to hold the database dump. On standard Nemo deployments, the directory/filesystem `/data/backup` is set up to perform these backups. Create a brand new directory and navigate to it:

```
1 [root@nemo-server ~]# cd /data/backup/
2 [root@nemo-server backup]# mkdir production_backup_20240711
3 [root@nemo-server backup]# cd production_backup_20240711
4 [root@nemo-server production_backup_20240711]#
```

5. Dump the database contents with the command `mongodump`. This will create a new directory dump under the current directory:

```
1 [root@nemo-server production_backup_20240711]# mongodump
2 2024-07-11T15:16:21.687+0200    writing admin.system.version to
3 2024-07-11T15:16:21.689+0200    done dumping admin.system.version (1 document)
4 2024-07-11T15:16:21.690+0200    writing calls.sip to
5 2024-07-11T15:16:21.690+0200    writing calls.rtp to
6 2024-07-11T15:16:21.690+0200    writing nemo.counters to
7 2024-07-11T15:16:21.690+0200    writing nemo.licenses_status to
8 2024-07-11T15:16:21.732+0200    done dumping nemo.licenses_status (2036
9     ↪ documents)
10 2024-07-11T15:16:21.732+0200    writing stats.arrays_bwg to
11 2024-07-11T15:16:22.864+0200    done dumping stats.arrays_bwg (452 documents)
12 ...
13 [root@nemo-server production_backup_20240711]# ls
14 dump
```

6. Copy over the Nemo application to the current directory:

```
1 [root@nemo-server production_backup_20240711]# cp -a /opt/nemo .
2 [root@nemo-server production_backup_20240711]# ls
3 dump nemo
```

#### 7. Create a compressed archive file with `tar zcvf backup_filename.tar.gz *`:

```
1 [root@nemo-server production_backup_20240711]# tar zcvf
  ↪ production_backup_20240711.tar.gz *
2 dump/
3 dump/nemo/
4 dump/nemo/netnetsmxrcs_sbcs.metadata.json
5 dump/nemo/settings.metadata.json
6 dump/nemo/sonus_gws.metadata.json
7 ...
```

Once the backup file is copied to a remote storage, it can be removed from the backup directory, along with the directory `dump` and `nemo` previously created.

## 4 Restore Procedure

1. Navigate to a directory with enough space to uncompress the backup. On standard Nemo deployments, the directory/filesystem `/data/backup` is set up to perform these operations. Create a brand new directory and navigate to it:

```
1 [root@nemo-server ~]# cd /data/backup/
2 [root@nemo-server backup]# mkdir production_restore_20240711
3 [root@nemo-server backup]# cd production_restore_20240711
4 [root@nemo-server production_restore_20240711]#
```

2. Uncompress the backup with `tar xvf backup_filename.tar.gz`:

```
1 [root@nemo-server production_restore_20240711]# tar zxvf
  ↪ production_backup_20240711.tar.gz
2 dump/
3 dump/nemo/
4 dump/nemo/netnetsmxrcs_sbcs.metadata.json
5 ...
6 [root@nemo-server production_restore_20240711]# ls
7 dump nemo production_backup_20240711.tar.gz
```

3. Stop the Nemo application with `systemctl stop nemo`.
4. Ensure that the application is not running anymore with `systemctl status nemo`:

```
1 [root@nemo-server ~]# systemctl status nemo
2 * nemo.service - SYSV: Nemo GUI
3   Loaded: loaded (/etc/rc.d/init.d/nemo; bad; vendor preset: disabled)
4   Active: inactive (dead) since Thu 2024-07-11 15:07:25 CEST; 54s ago
5     Docs: man:systemd-sysv-generator(8)
6  Process: 21026 ExecStop=/etc/rc.d/init.d/nemo stop (code=exited, status=0/
7     ↪ SUCCESS)
8  Process: 20486 ExecStart=/etc/rc.d/init.d/nemo start (code=exited, status=0/
9     ↪ SUCCESS)
```

5. Stop the MongoDB database with `systemctl stop mongod`.

6. Ensure that the application is not running anymore with `systemctl status mongod`:

```
1 [root@nemo-server ~]# systemctl status mongod
2 * mongod.service - High-performance, schema-free document-oriented database
3   Loaded: loaded (/usr/lib/systemd/system/mongod.service; enabled; vendor
4     ↪ preset: disabled)
5   Active: inactive (dead) since Thu 2024-07-11 15:34:39 CEST; 4s ago
6     Docs: https://docs.mongodb.org/manual
7  Main PID: 1249 (code=exited, status=0/SUCCESS)
```

7. Remove all MongoDB data files with `rm -rf /data/db/*`.

8. Restart the MongoDB database with `systemctl start mongod`.

9. Restore the database with the command `mongorestore dump/`:

```
1 [root@nemo-server production_restore_20240711]# mongorestore dump/
2 2024-07-11T15:42:37.292+0200   preparing collections to restore from
3 2024-07-11T15:42:37.298+0200   reading metadata for nemo.counters from dump/
4     ↪ nemo/counters.metadata.json
5 2024-07-11T15:42:37.299+0200   restoring nemo.counters from dump/nemo/counters
6     ↪ .bson
7 2024-07-11T15:42:37.302+0200   reading metadata for stats.arrays_bwg from dump
8     ↪ /stats/arrays_bwg.metadata.json
9 2024-07-11T15:42:37.302+0200   restoring stats.arrays_bwg from dump/stats/
10    ↪ arrays_bwg.bson
11 2024-07-11T15:42:37.312+0200   reading metadata for calls.sip from dump/calls/
12    ↪ sip.metadata.json
13 2024-07-11T15:42:37.312+0200   restoring calls.sip from dump/calls/sip.bson
14 ...
```

10. Copy over the Nemo application backup to `/opt/` with `cp -a nemo /opt/`:

11. Restart the Nemo application with `systemctl start nemo`.

## 12. Ensure the application is running with `systemctl status nemo`:

```

1 [root@nemo-server production_restore_20240711]# systemctl status nemo
2 * nemo.service - SYSV: Nemo GUI
3   Loaded: loaded (/etc/rc.d/init.d/nemo; bad; vendor preset: disabled)
4   Active: active (running) since Thu 2024-07-11 16:07:46 CEST; 5s ago
5     Docs: man:systemd-sysv-generator(8)
6   Process: 3233 ExecStop=/etc/rc.d/init.d/nemo stop (code=killed, signal=KILL)
7   Process: 3333 ExecStart=/etc/rc.d/init.d/nemo start (code=exited, status=0/
8     ↪ SUCCESS)
9   CGroup: /system.slice/nemo.service
10         |-3342 /opt/nemo/bin/python /opt/nemo/bin/nemo-watchdog
11         |-3343 /opt/nemo/bin/python /opt/nemo/bin/nemo-queue-runner 0 2
12         |-3345 /opt/nemo/bin/python /opt/nemo/bin/nemo-queue-runner 1 2
13         ↪ collector
14         |-3347 /opt/nemo/bin/python /opt/nemo/bin/nemo-gui
15         |-3348 /opt/nemo/bin/python /opt/nemo/bin/nemo-rest
16         |-3350 /opt/nemo/bin/python /opt/nemo/bin/nemo-stats-engine
17         ↪ updateStatistics 0 4 broadsoft
18         |-3355 /opt/nemo/bin/python /opt/nemo/bin/nemo-stats-engine
19         ↪ updateStatistics 1 4 broadsoft
20         |-3357 /opt/nemo/bin/python /opt/nemo/bin/nemo-stats-engine
21         ↪ updateStatistics 2 4 broadsoft
22         |-3360 /opt/nemo/bin/python /opt/nemo/bin/nemo-stats-engine
23         ↪ updateStatistics 3 4 broadsoft
24         |-3361 /opt/nemo/bin/python /opt/nemo/bin/nemo-stats-engine
25         ↪ updateStatistics 0 4 capture
26         |-3362 /opt/nemo/bin/python /opt/nemo/bin/nemo-stats-engine
27         ↪ updateStatistics 1 4 capture
28         |-3364 /opt/nemo/bin/python /opt/nemo/bin/nemo-stats-engine
29         ↪ updateStatistics 2 4 capture
30         |-3367 /opt/nemo/bin/python /opt/nemo/bin/nemo-stats-engine
31         ↪ updateStatistics 3 4 capture
32         |-3369 /opt/nemo/bin/python /opt/nemo/bin/nemo-stats-engine
33         ↪ updateStatistics 0 4 netnetsd
34         |-3371 /opt/nemo/bin/python /opt/nemo/bin/nemo-stats-engine
35         ↪ updateStatistics 1 4 netnetsd
36         |-3374 /opt/nemo/bin/python /opt/nemo/bin/nemo-stats-engine
37         ↪ updateStatistics 2 4 netnetsd
38         |-3376 /opt/nemo/bin/python /opt/nemo/bin/nemo-stats-engine
39         ↪ updateStatistics 3 4 netnetsd
40         |-3377 /opt/nemo/bin/python /opt/nemo/bin/nemo-reporting-engine
41         |-3379 /opt/nemo/bin/python /opt/nemo/bin/nemo-anomalies-engine
42         |-3382 /opt/nemo/bin/python /opt/nemo/bin/nemo-stats-export-engine
43         |-3384 /opt/nemo/bin/python /opt/nemo/bin/nemo-cdr-export-engine
44         |-3387 /opt/nemo/bin/python /opt/nemo/bin/nemo-health-monitor
  
```

```
32      |-3390 /opt/nemo/bin/nemo-capture-orchestrator
33      ^-3397 /opt/nemo/bin/python /opt/nemo/bin/nemo-ipfix-collector
34
35 Jul 11 16:07:46 nemo-server systemd[1]: Starting SYSV: Nemo GUI...
36 Jul 11 16:07:46 nemo-server nemo[3333]: Starting nemo watchdog: [ OK ]
37 Jul 11 16:07:46 nemo-server systemd[1]: Started SYSV: Nemo GUI.
38 Warning: nemo.service changed on disk. Run 'systemctl daemon-reload' to reload
      ↪ units.
```