AOS Only - What to do when /home partition or /home/nutanix directory on a Controller VM (CVM) is full

Article #   KB-1540 | Last modified on   Jan 22nd 2025

Summary: This article describes ways to safely free up space if /home partition or /home/nutanix directories of a CVM become full or do not contain sufficient free space to facilitate an AOS upgrade.

Troubleshooting | Infrastructure | Upgrade | AOS | Nutanix Cloud Clusters (NC2) - AWS | Nutanix Cloud Clusters (NC2) - Azure

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Description:

Important Notes:

- **Do not use this KB or the cleanup script if /home partition is exceeding the limit on a <u>Prism Central VM (PCVM)</u>. For the PCVM issue, refer to KB 5228.**
- Login to the CVMs as **nutanix** user
- Do not treat the Nutanix CVM (Controller VM) as a normal Linux machine.
- Do not use **rm -rf** under any circumstances unless stated. It will lead to data loss scenarios.
- If you are running LCM-2.6 or LCM-2.6.0.1, LCM log collection fills up /home directory please refer KB 14671 for workaround.
- If you receive /home partition usage high alert on a cluster running NCC 4.0.0, also check KB 10530.
- You can review the specific clusters affected by this alert via the discoveries on the Support Portal powered by Nutanix Insights here
- Contact Nutanix Support if you have any doubts.

CVM */home* partition or */home/nutanix* directory being full can be reported in two scenarios:

- The NCC health check disk_usage_check reports that the */home* partition usage is above the threshold (by default, 75%).
- The pre-upgrade check test_nutanix_partition_space checks if all nodes have a minimum of 5.6 GB space in the */home/nutanix* directory.

The following error messages are generated in Prism by the test_nutanix_partition_space pre-upgrade check:

```
Not enough space on /home/nutanix directory on Controller VM [ip].
Available = x GB : Expected = x GB
```

```
Failed to calculate minimum space required
```

```
Failed to get disk usage for cvm [ip], most likely because of failure
to ssh into cvm
```

```
Unexpected output from df on Controller VM [ip]. Please refer to
preupgrade.out for further information
```

Nutanix reserves space on the SSD tier of each CVM for its files and directories. These files and directories are in the /home folder you see when you log in to a CVM. The size of the *home* folder is capped at 40 GB so that most of the space on SSD is available for user data.

Due to the limited size of the *home* partition, running low on free space and triggering Prism Alerts, NCC Health Check failures or warnings, or Pre-Upgrade Check failures is possible. These guardrails exist to prevent *home* from becoming full, as this causes data processing services like Stargate to become unresponsive. Clusters where multiple CVMs' *home* partitions are 100% full often result in downtime of user VMs.

When cleaning up unused binaries and old logs on a CVM, it is important to note that all the user data partitions on each drive associated with a given node are also mounted within *home*. Nutanix advises strongly against using undocumented commands like **rm -rf /home** since this will also wipe the user data directories mounted within this path. This article aims to guide you through identifying the files causing the CVM to have low free space and removing only those that can be deleted safely.

Solution:

Note: The latest versions of AOS include enhancements and bug fixes designed to optimize /home space utilization. To avoid potential issues down the line, it's crucial to ensure your AOS is regularly updated.

General Guidance

- Checking the space usage in *home*.
  To accommodate a potential AOS upgrade, usage should be below 70%. Use the **df -h** command to verify the amount of free space in *home*. In the example below, CVM x.x.x.12 *home* usage is 81%.

```
nutanix@cvm$ allssh "df —h /home"
================== x.x.x.11 ==================
/dev/md2            40G    22G    18G  55% /home
```

```
================= x.x.x.12 =================
/dev/md2            40G    32G   7.4G   81% /home
================= x.x.x.13 =================
/dev/md2            40G    24G    16G   61% /home
```

To obtain a further breakdown of usage in descending order, rse the **du -h** command with -d flag to obtain a no of dir level you required. For example, below **-d 2** implies looking in two directory levels from */home/nutanix/data* , additionally, adding *head -n 15* will display the top 15 directories that can be then compared with other CVMs to see where the high usage is coming from:

```
nutanix@CVM:~$ allssh "du -h -d 2 -x /home/nutanix/data |sort -h -r
|head -n 15"
================= xx.xx.xx.11 =================
17G     /home/nutanix/data
9.4G     /home/nutanix/data/logs
4.6G     /home/nutanix/data/installer/el7.*
4.6G     /home/nutanix/data/installer
11G     /home/nutanix/data/logs/sysstats
512M     /home/nutanix/data/ncc/installer
================= xx.xx.xx.12 =================
18G     /home/nutanix/data
9.5G     /home/nutanix/data/logs
4.6G     /home/nutanix/data/installer/el7.*
4.6G     /home/nutanix/data/installer
3.0G     /home/nutanix/data/logs/sysstats
610M     /home/nutanix/data/logbay/taskdata
.
.
```

- CVM */home* partition information can be collected using the logbay command (NCC 4.0.0 and above, KB 6691).

```
nutanix@cvm$ logbay collect -t disk_usage_info
```

- Cleaning unnecessary files under */home* directory.
  If you have any open cases with pending Root Cause Analysis, check with the case owner whether these log files are still required or can be discarded.

Warnings: Ensure to keep the important notes mentioned at the top of the Knowledge Base (KB) article handy before applying any workarounds

Method 1. Using approved script
Download and run *KB-1540_clean_v12a.sh* to clean files from approved directories. Note: This script is **NOT** qualified to be used on Prism Central VM.

1. From any CVM, run the following commands to download KB-1540_clean_v12a.sh:
   (MD5:e172350fff1633db1c2e7104e6200e34)

```
nutanix@cvm:~$ cd ~/tmp
nutanix@cvm:~/tmp$ wget -O KB-1540_clean_v12a.sh
http://download.nutanix.com/kbattachments/1540/KB-1540_clean_v12a.sh
nutanix@cvm:~/tmp$ md5sum KB-1540_clean_v12a.sh
e172350fff1633db1c2e7104e6200e34  KB-1540_clean_v12a.sh
```

2. Deploy the script to a local CVM or all CVMs of the cluster:

```
nutanix@cvm:~/tmp$ sh KB-1540_clean_v12a.sh

Select package to deploy
     1 : Deploy the tool only to the local CVM
     2 : Deploy the tool to all of the CVMs in the cluster
     Selection (Cancel="c"):          <==== 1 or 2
```

3. Execute the script to clear files from approved directories.

- Help

```
nutanix@cvm:~/tmp$ ./nutanix_home_clean.py --help    [--no_color]
```

- Interactive mode

```
nutanix@cvm:~/tmp$ ./nutanix_home_clean.py    [--no_color]
```

- Non-interactive mode

```
nutanix@cvm:~/tmp$ ./nutanix_home_clean.py <command> <option>    [--no_color]
```

Note: If the output of the script or its coloring looks incorrect, try to set the environment variable before running the script or use "--no_color" option:

```
nutanix@cvm:~/tmp$ TERM=xterm
```

Interactive mode

```
                      .22 - PuTTY                                    —    □    ✕

  Cleaning plans: ALL items                              Operation    Usage

   1: Core files (~/data/cores)                          remove            0
   2: Binary logs                                        remove            0
   3: Old NCC installer                                  remove       567.82M
   4: Log bundle (log_collector)                         remove            0
   5: Log bundle (logbay)                                remove            0
   6: Log bundle (Prism)                                 remove            0
   7: Uncompressed software (ongoing pre-upgrade?)       remove            0
   8: Foundation ISOs                                    remove            0
   9: Foundation tmp (ongoing installation?)             remove            0
  10: Downloaded installer                               instruction     1.63G
  51: Prism-Case 1 (~/prism/temp)                        instruction        0
  52: Prism-Case 2 (~/data/logs/catalina.out)            instruction        0
  53: Old sysstats                                       remove            0
  54: Old AOS installer                                  remove            0
  55: ENG-220802                                         instruction        0
  56: ENG-260361                                         instruction        0
  57: ENG-266493                                         instruction        0
  58: ENG-314541                                         remove            0
  59: Possible manually created files                    instruction     1.46G

                                                          Total          3.65G

  CVM            .22
   /home usage = 25.03G (65%)    >> immediate cleaning is unnecessary


  Main menu
    ( Quit, Help, AllPlans, Rescan, ListAll, RunAll, ExportAll, ## ) : ▊
    ──── nutanix_home_clean v9 ─────────────────────────────────────
```

Main menu

All Plans	Switch displaying plans (all / concerned)
Re**s**can	Rescan usages and update table
List All	List all targetted files/directories
Run All	Run or Dry-run all plans
Export All	Export all targetted files/directories to CSV
##: Plan **#**	Go to the plan item menu

Plan item menu

Re**s**can	Rescan and update table
Operation	Change operation (remove/shelter/etc.)
List	List targetted files/directories
Dryrun	Dry-run this plan
Run	Run this plan
Export	Export targetted files/directories to CSV

Non-interactive mode

```
                                  .22 - PuTTY                                    —  □  ✕

nutanix@NTNX-TEST-CVM:              .22:~/tmp$ ./nutanix_home_clean.py --scan

Checking the old troublehooting files.
   "CVMs:/home/nutanix/data/stargate-storage/disks/*/TechSupport"

CVM              .22 : None.

┌─────────────────────────────────────────────┬───────────────┬─────────┐
│ Cleaning plans: Concerned items              │  Operation    │  Usage  │
├─────────────────────────────────────────────┼───────────────┼─────────┤
│  3: Old NCC installer                        │  remove       │ 567.82M │
│ 10: Downloaded installer                     │  instruction  │   1.63G │
│ 59: Possible manually created files          │  instruction  │   1.46G │
├─────────────────────────────────────────────┴───────────────┼─────────┤
│                                                      Total    │   3.65G │
└──────────────────────────────────────────────────────────────┴─────────┘
CVM              .22
  /home usage = 25.03G (65%)    >> immediate cleaning is unnecessary

nutanix@NTNX-TEST-CVM:              .22:~/tmp$ █
```

Commands

$ **./nutanix_home_clean.py --scan**	Scan and show the usages.
$ **./nutanix_home_clean.py --list** **$** **./nutanix_home_clean.py --list=<##>**	List up the target files for all plans or specific plan-##.
$ **./nutanix_home_clean.py --dryrun** **$** **./nutanix_home_clean.py --dryrun=<##>**	Dry-run all plans or specific plan-##.
$ **./nutanix_home_clean.py**	Run all plans or specific plan-##.

```
--run
$
./nutanix_home_clean.py
--run=<##>
```

Additional Options

--operation= <op>	Choose operation (remove, shelter)
--sheletedir= <path>	Set the sheltering location.
--yes	For skipping disclaimer and confirmation.

If an item is listed as "instruction" under the Operation column, you can view the instructions by running that item.

For example:

```
┌─────────────────────────────────────────────────────────────┬───────────
│ Cleaning plans: Concerned items                             │ Operation
│ Usage  │
├──────────┤                                                   ├───────────
│ 5: Log bundle (logbay)                                       │remove
│   2.25G│
│10: Downloaded installer
│instruction│ 824.00M│
│59: Possible manually created files
│instruction│  3.69G│
├──────────┤                                                   ├───────────
│                                                              Total
│   6.74G│
├──────────┤
│CVM x.x.x.x
│
│ /home usage = 30.99G (80%)   >> cleaning is recommended
│
└─────────────
```

Items 10 and 59 are listed as "instruction". To see the instructions for item 10, run it by entering "10" on the Main menu and entering "R" on the next screen. Sample output below:

```
┌─────────────────────────────────────────────────────────────┬──────────────
┌───────────────┐                                              │
│ Cleaning plan 10                                             │ Operation
│ Usage   │
├───────────────────────────────────────────────────────────────┼──────────────
┌───────────────┐
│10: Downloaded installer
│instruction│ 824.00M│
└───────────────────────────────────────────────────────────────┴──────────────
└───────────────┘

Plan 10 menu
  ( Quit, Back, Help, Rescan, Operation, List, Dryrun, Run, Export): R

Run operation for plan 10: "instruction"
 Manual operation is required for plan 10
   -- Instruction --
   These downloaded installers can be deleted from "Upgrade Software"
on Prism.
   Please find a section with "/home/nutanix/software_downloads/" on
   KB-1540 (http://portal.nutanix.com/kb/1540)
   Older installer files could not be listed on Prism or by ncli.
   Please contact Nutanix Support whenever you need assistance.


┌─────────────────────────────────────────────────────────────┬──────────────
┌───────────────┐                                              │
│ Cleaning plan 10                                             │ Operation
│ Usage   │
├───────────────────────────────────────────────────────────────┼──────────────
┌───────────────┐
│10: Downloaded installer
│instruction│ 824.00M│
└───────────────────────────────────────────────────────────────┴──────────────
└───────────────┘
```

Repeat the above for item 59 to see the instructions for item 59.

4. Cleaning up after the troubleshooting
The downloaded script files, logs and exported files are expected to be removed manually after every troubleshooting. The total size of these files should be small and will not affect CVM's filesystem. You can remove the following files once the script becomes unnecessary.
<yymmdd-hhmmss> is the creation date and time.

- In the CVM where the KB script is deployed (*/home/nutanix/tmp/*):
  KB-1540_clean.sh - downloaded file from the KB
  deploytool_yyyymmdd-hhmmss.log - deployment script's log (unnecessary after deployment)
  nutanix_home_clean.py - main KB script
  nutanix_home_clean_config.py - config file for the main script
- In the rest of the CVMs in the cluster - if deployed to all CVM in step 2:
  nutanix_home_clean.py - main KB script
  nutanix_home_clean_config.py - config file for the main script
- Every CVM where nutanix_home_clean.py is run:
  KB-1540_v12_yyyymmdd_hhmmss_nutanix_home_clean.log - KB script's log
  KB-1540_v12_yyyymmdd_hhmmss_export_*.csv - exported files (if exported)

The following command can remove all of the above:

```
nutanix@cvm:~/tmp$ allssh 'cd ~/tmp/; /usr/bin/rm KB-1540*
deploytool_*.log nutanix_home_clean.py nutanix_home_clean_config.py'
```

Method 2 Manual method

PLEASE READ: Only the files under the directories stated below are safe to delete. Take note of the specific guidance for removing files from each directory. Do not use any other commands or scripts to remove files. Do not use **rm -rf** under any circumstances.

1. Removing old logs and core files. Only delete the files inside the following directories and not the directories themselves.

   - */home/nutanix/data/cores/*
   - */home/nutanix/data/binary_logs/*
   - */home/nutanix/data/ncc/installer/*
   - */home/nutanix/data/log_collector/*
   - */home/nutanix/prism/webapps/console/downloads/NCC-logs-**

   Use the following syntax for deleting files within each of these directories:

   ```
   nutanix@cvm:~$ /usr/bin/rm /home/nutanix/data/cores/*
   ```

2. Removing old ISOs and software binaries. Only delete the files inside the following directories and not the directories themselves.
   Check the current running AOS version under "Cluster Version":

   ```
   nutanix@cvm:~$ ncli cluster info | egrep 'Cluster [Name|Version]'
   Cluster Name : Axxxxa
   Cluster Version : 5.10.2
   ```

- */home/nutanix/software_uncompressed/* - The software_uncompressed folder is only in use when the pre-upgrade is running and should be removed after a successful upgrade. If you see a running cluster that is currently not upgrading, it is safe to remove everything within the software_uncompressed directory. Delete any old versions other than the version to which you are upgrading.
- */home/nutanix/foundation/isos/* - Old ISOs of hypervisors or Phoenix.
- */home/nutanix/foundation/tmp/* - Temporary files that can be deleted.
  Use the following syntax for deleting files within each of these directories:

```
nutanix@cvm:~$ /usr/bin/rm /home/nutanix/foundation/isos/*
nutanix@cvm:~$ /usr/bin/rm /home/nutanix/foundation/tmp/*
```

- */home/nutanix/software_downloads/*
  If the files under the software_downloads directory are not required for any planned upgrades, remove them from *Prism Web Console > Settings> Upgrade Software*. Also check *File Server*, *Hypervisor*, *NCC*, and *Foundation* tabs to locate the downloads you may not require. The example below illustrates two versions of AOS available for upgrade, each consumes around 5 GB. Click on the 'X' to delete the files.
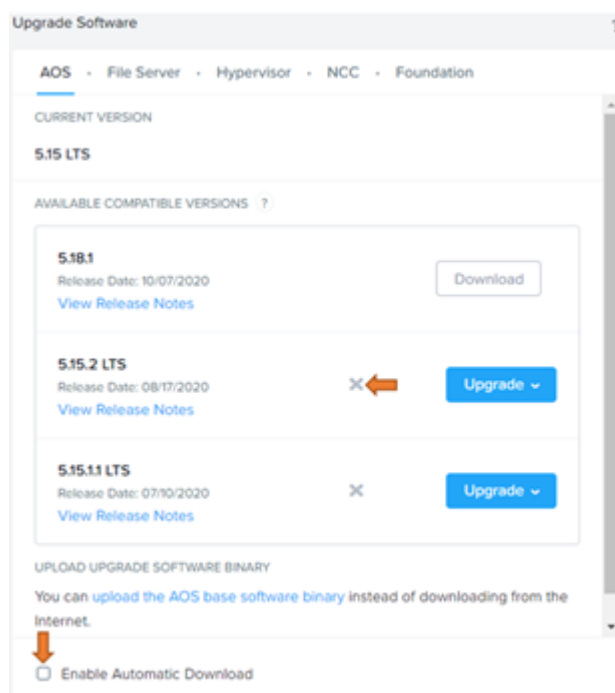
  If it is checked, uncheck the "Enable Automatic Download" option. Left unmonitored, the cluster will download multiple versions, consuming space in the home directory unnecessarily.
3. Re-check space usage in */home* using **df -h** (see **General Guidance** of this article) to confirm that it is now below 70%.

Note: If you cannot delete the files with the below error and space not claimed, contact Nutanix Support for assistance.

```
nutanix@CVM:~$ sudo /usr/bin/rm -f
/home/nutanix/software_uncompressed/xxx
```

```
==> System files detected:
/home/nutanix/software_uncompressed/xxx
Operation not allowed. Deletion of system files will cause  cluster
instability and potential data loss.
```

Important Notes for NC2 Clusters:

It has been observed in some instances of NC2 clusters that /tmp gets close to full. You can follow the below steps to clean ~/tmp directory.

1. SSH to the affected CVM and check the disk usage by running "df -h" command:

```
nutanix@CVM:~$ df -h /tmp
Filesystem       Size  Used Avail Use% Mounted on
/dev/loop0       240M  236M     0 100% /tmp
```

2. In the above output, we can see /tmp is showing 100%. Change the directory to ~/tmp and sort the list using **sudo du -aSxh /tmp/* | sort -h**.

```
4.0K    /tmp/hsperfdata_nutanix
12K     /tmp/lost+found
23K     /tmp/rc_nutanix_start.1731.log
39K     /tmp/rc_nutanix_start.1734.log
78M     /tmp/infra-gateway.ntnx-i-02a754840c30b5e66-a-
cvm.root.log.ERROR.20230123-201357.3575
78M     /tmp/infra-gateway.ntnx-i-02a754840c30b5e66-a-
cvm.root.log.INFO.20230123-200932.3575
78M     /tmp/infra-gateway.ntnx-i-02a754840c30b5e66-a-
cvm.root.log.WARNING.20230123-201357.3575
```

3. From the output you receive above, manually delete files larger than 12K. For example, see below files deleted from the above output.

```
nutanix@CVM:~/tmp$ sudo /usr/bin/rm /tmp/infra-gateway.ntnx-i-
02a754840c30b5e66-a-cvm.root.log.WARNING.20230123-201357.3575
nutanix@CVM:~/tmp$ sudo /usr/bin/rm /tmp/infra-gateway.ntnx-i-
02a754840c30b5e66-a-cvm.root.log.INFO.20230123-200932.3575
nutanix@CVM:~/tmp$ sudo /usr/bin/rm /tmp/.ntnx-i-02a754840c30b5e66-a-
cvm.root.log.ERROR.20230123-201357.3575
nutanix@CVM:~/tmp$ sudo /usr/bin/rm /tmp/rc_nutanix_start.1734.log
nutanix@CVM:~/tmp$ sudo /usr/bin/rm /tmp/rc_nutanix_start.1731.log
```

4. After deleting, you can check available free space using **df -h**:

```
nutanix@CVM:~/tmp$ df -h /tmp
Filesystem       Size  Used Avail Use% Mounted on
```

```
/dev/loop0         240M    14M   210M    6% /tmp
```

5. As you can see, available free space now shows 6%. You can further recheck with:

```
nutanix@CVM:~$ ncc health_checks hardware_checks disk_checks
disk_usage_check --cvm_list=<cvm IP>
```

or

```
nutanix@CVM:~$ ncc health_checks run_all
```

Contact Nutanix Support for assistance if *home* usage is still above the threshold after cleaning up files from the approved directories. Under no circumstances should you remove files from any other directories aside from those recommended by this article, as these may be critical to the CVM performance or may contain user data.