DIATEAM
41 rue Yves Collet
29200 BREST CEDEX2
Tél: +33 (0) 298 050 050
contact@diateam.net - http://www.diateam.net

diateam®
military & civil cybersecurity solutions

hns®
PLATFORM

HNS PRO HARDWARE & SOFTWARE PLATFORMS

Backup and restoration documentation

Ref: HNS-BackupAndRestorationProcedure
Version: 1.0

Table of contents

1. Prerequisites

Note: This section explains how to create an external "restoration & backup" hard drive and the required setup for both the backup and restoration procedure.

1.1 Building a bootable USB device

First, download the archlinux installation ISO file. You can find it here https://www.archlinux.org/download/ in the "HTTP Direct Downloads" section. We're using archlinux here because the installation ISO contains all the tools necessary for the backup and boots on even the most recent hardware without any issue.

Once you've downloaded that image, plug your USB device in and get its path (it should be of the form */dev/sd[a-z]*). You can easily find that out by using the *dmesg* command which will tell you something like

```
scsi 10:0:0:0: Direct-Access     Dell      Recovery USB     8.07 PQ: 0 ANSI: 4
sd 10:0:0:0: Attached scsi generic sg3 type 0
sd 10:0:0:0: [sdc] 15132672 512-byte logical blocks: (7.75 GB/7.22 GiB)
sd 10:0:0:0: [sdc] Write Protect is off
sd 10:0:0:0: [sdc] Mode Sense: 23 00 00 00
sd 10:0:0:0: [sdc] Write cache: disabled, read cache: enabled, doesn't support DPO or␣
↪FUA
 sdc: sdc1
sd 10:0:0:0: [sdc] Attached SCSI removable disk
```

In that case, the path is */dev/sdc*.

We can now copy the image onto the USB device with the following command: *sudo cp archlinux-2019.12.01-x86_64.iso /dev/sdc*

Note that the command will be a bit different for you as the date of the image will not be the same and the device might be different.

Warning: This is a destructive step. Make sure to double check the device name

Note: The following is optional and only useful if you want to use the same USB device to store your backups

We will now create a partition with the remaining free space on the USB device. First, run the following command *sudo fdisk /dev/sdc* (remember to change the name if necessary).

We will now tell it to create a new partition with the subcommand *n* then tell it to create a primary partition by pressing *p*. You can leave the rest as default by pressing enter until you're back on the *Command (m for help):* prompt. Then write your changes by using the *w* command.

Finally run the command: *sudo mkfs.ext4 /dev/sdc3* (note the 3 at the end of the end of the name, this is not a typo).

1.2 Booting on the USB hard drive

Make sure the server has been properly shutdown and plug the USB hard drive into one of its front USB port. Start the server and press the F11 key to get into the boot manager. Note that you cannot just press it when the server starts, you have to wait until it asks you to (text in the top right corner of the screen). Once in the boot menu, choose the "One shot UEFI boot" option and then "front USB device". On the new menu that appears, select the first option and wait for the system to boot. You can now proceed to the rest of the procedure.

Note: Those instructions are valid for DELL servers and might differ for yours. Refer to your vendor documentation to find out how to boot on a USB device

---

1.3 Setup the source/destination folder

1.3.1 NFS

If you want the backups to be on the NAS, you will first need to give yourself an IP on the NFS network. To know which IP you should have, please refer to the technical specifications document. You can add an IP with the following commands:

```
ip address add 10.100.2.1/24 dev eno1
ip link set eno1 up
```

You should then be able to mount the nas */data* to your */mnt* with the following command:

```
mount 10.100.2.100:/data /mnt
```

1.3.2 USB

There is some free space on the USB device in the last partition, you can use that to make backups of the systems without overwriting the factory backups. To do so, you will need to mount that partition in the */mnt* directory with one of the following command:

If you are on a master or the NAS:

```
mount /dev/sdc4 /mnt
```

If you are on a node:

```
mount /dev/sdb4 /mnt
```

1.4 Finding the right partition

A list of all partitions can be obtained via the following command:

```
fdisk -l
```

You will have to keep in mind that the USB device will also appear in the list. I would advise to check that the sizes correspond to the partition path before doing anything.

A reminder of our usual partitions layout:

- */dev/sda1*: EFI partition. You should not have to backup this as it should not change much over time.
- */dev/sda2*: Main system partition.
- */dev/sdb1*: Contains the hynesim catalog on the master and the data on the NAS if present. This will take a long time to make a backup of. It does not exist on any node.

2. Backup

Make sure you followed the *Setup the source/destination folder* section and that your */mnt* is properly mounted. For every partition you want to backup, you will have to run the following command:

```
partclone.ext4 -c -s /dev/sda2 -o /mnt/backup_name
```

Replace */dev/sda2* by the partition you want to backup and *backup_name* by the name of the file you want to write. Keep in mind that the command will not overwrite any existing file, it will just fail unless you add the *-f* flag.

Note: If you want to backup */dev/sda1*, you will need to change *partclone.ext4* to *partclone.fat32*.

When the backup is done, you should see the following output:

```
partclone successfully cloned the device (/dev/sdY) to the image (/mnt/hostname.pfX.
↪sdY)
```

You can then either reboot the machine via the *reboot* command or create new backups by replaying the current step.

3. Restoration

Warning: This is a destructive step. Make sure to double check every partition and file name while following the documentation.

To restore a partition, you first need to find the right file in the */mnt* folder. You can list those files with the *ls /mnt* command. Make sure you pick the right file for the partition you want to restore. The file size will not help as partclone only takes the useful data. The factory backups all contain the hostname of the machine and the partition it targets. See *the partition layout*.

To restore a file to a partition, you will need to run the following command:

```
partclone.ext4 -r -s /mnt/hostname.pfX.sdY -o /dev/sdY
```

Note: If you want to restore */dev/sda1*, you will need to change *partclone.ext4* to *partclone.fat32*.

When the restoration is done, you should see the following output:

```
partclone successfully restored the image (/mnt/hostname.pfX.sdY) to the device (/dev/
↪sdY)
```

You can then either reboot the machine via the *reboot* command or continue restoring partitions by replaying the current step.