
UNITRENDS BAREMETAL TROUBLESHOOTING

VERSION 1.0

INTRODUCTION

The goal of this document is to provide Unitrends appliance users steps to easily troubleshoot BareMetal backup and recovery issues. This document should be used in addition to the information provided in the Unitrends Appliance and Agents User Manual and the Windows' agent help files.

This document does not cover Linux Hot BareMetal media creation and troubleshooting.

CLIENT REGISTRATION

When a client is registered to the DPU, it is recommended that the BareMetal media be immediately created and tested. This prevents losing precious time during a disaster by using the media present to perform the restore. If drivers have to be located at the time of restore, the recovery time objective may not be met.

BOOT MEDIA CREATION

When creating the BareMetal boot media, the user has two choices:

1. Linux based BareMetal boot media
2. Windows based BareMetal boot media

WINDOWS BASED BAREMETAL MEDIA

1. Windows based BareMetal boot media is created on the Windows client. The operating system on the Windows boot CD is Windows 2003. The boot CD has drivers for many mass storage devices and network adapters; however there may be cases when the drivers need to be inserted into the boot CD.
 - When inserting Network card drivers, the CD creation process asks the user if additional drivers need to be installed. Please provide the Windows 2003 drivers for the appropriate adapter to be compatible with the CD. Please note that the first NIC available is configured with the client's IP address and is used to connect to the DPU. If the server has multiple NIC cards and the BareMetal software cannot connect to the DPU, please verify that the network cable is connected to the appropriate NIC. You may also want to disable the other NICs in the BIOS and keep the required NIC active and enabled. Note that the Network card drivers cannot be inserted at run time using the F6 option as used for Mass Storage Controllers below.
 - When inserting Mass Storage Controller drivers, boot the BareMetal media and hit F6 as it comes up (right after post). This option allows the user to insert a Mass Storage Controller driver to allow the operating system on the CD to access the hard drives. In this case, the vendor provided Windows 2003 drivers are required.

- If there are multiple Mass storage controllers in the system (SATA RAID controller and an SCSI controller), there could be a hardware conflict which may result in a blue screen during the CDROM boot. If there is a tape device attached directly to the system, please disconnect the tape device. Please disable the conflicting devices from the BIOS and leave only the required Mass storage device enabled. This will ensure that hardware conflicts do not disrupt the BareMetal backup or restore process.
- In cases where there is no RAID adapter and SATA drives are connected to the motherboard directly and configured with AHCI, the Windows Boot CD may blue screen. Please change the BIOS settings for SATA from AHCI to IDE.

2. Restore Process

- The BareMetal restore must happen to a disk as large as or larger than the original drive. Restoring to a disk of smaller size is not supported.
- The restore recreates the partitions (unless the Selective Restore is used) and restores the boot and system volumes.
- It is advisable that BareMetal backups for Domain Controllers occur more frequently than the tombstone period in Active Directory, otherwise the restored server will not be able to join the domain.
- Please note that the drive letters when booted into the boot CD may not match the drive letters under a running Windows system. When performing a selective restore, please ensure that the disk and partition (as indicated by the size and serial number) match the targeted restore.
- In some situations, the geometry of the original drives may not match the geometry of the drives during the restore, even if the RAID controller has not changed. Moving to larger disks in the RAID could trigger a geometry incompatibility. After the restore, if you cannot browse files on C: from the boot CD or after a restore the system hangs at a black screen with a blinking cursor, it is a sign of a geometry mismatch. In that situation, there are two options :
 - a. Boot into the Windows BareMetal media, go to a Command Prompt and run `z:\PCBP\ddd.exe`.

The usage of the utility is as follows:

```
ddd dmp disk_index start_sect[0-256] num_of_sect[1-128] sector_dump_file:
```

```
dumping to file
```

```
ddd chk disk_index: check MBR/BPB mismatch
```

```
ddd fix disk_index: fix MBR/BPB mismatch
```

- b. Use the "chk" option to check for geometry inconsistencies and then run "fix" to fix any inconsistencies found.

Example :

To check the geometry:

```
Z:\PCBP\ddd chk 0
```

To fix the geometry:

```
Z:\PCBP\ddd fix 0
```

(where 0 is the disk_index)

- c. Use the Linux Boot Media for the restore.

If a dissimilar restore is being performed, then boot into the Windows Boot Media and go to Restore Options -> Driver Injection and provide the vendor supplied .inf file for the target Mass Storage Controller.

- o If a dissimilar restore is being performed to an IDE system, the user is not given an opportunity to provide a driver file. The reason is that the IDE drivers are built into the Operating system and are not distributed separately. The drivers that are present on the Windows BareMetal media are inserted into the target system.

Linux Based Boot Media

3. BareMetal Optimizer:

- o When a BareMetal backup is performed using the Linux media, every sector is interrogated to determine if it is a blank sector. If there is some data in the sector of the partition, the sector is included in the backup. This could cause the BareMetal Backup to be larger in size (sometimes considerably larger) if the disks were not formatted before installing the Operating System. This could also happen over time where files are created and deleted and the disk sectors are not used optimally by the running Operating system, causing a lot of sectors to be "dirty", consequently being backed up in the BareMetal backup. This can be addressed by running the BareMetal Optimizer.

- a. On Linux/Unix systems, run:

```
/usr/bp/bin/bputil -X
```

To optimize the Root Drive. This process cleanses the disk and zeroes out the sectors that are not being actively used by the running operating system.

- b. On Netware Systems, a BareMetal Optimizer will be released in 4.1.1.-2. To run it, execute:

```
SYS:\BP\bmopt.nlm.
```

- c. On Windows systems, running NTFS a Hot BareMetal is recommended or using the Windows BareMetal media is recommended, since the NTFS file system is queried to find exactly which clusters are used. If the Linux Boot

Media is used, then the BareMetal optimizer can be run by launching the Windows client interface and clicking Options->BareMetal Optimize.

4. If the Linux boot media does not detect the hardware of a certain system, there is no provision to supply a driver at run time like the Windows Boot Media. Hence multiple driver sets are shipped with the DPU Appliance software. To use the secondary drivers set, go to Configure->Settings->BareMetalConfig->UseAlternateImage and change the value to True. Please recreate the media and retry the operation.
5. It is advised that conflicting hardware is disabled in the BIOS as mentioned in the Windows Boot Media section. All tape drives must be disconnected and disabled.