

How To Recover Unbootable vEdge-5000 or ISR1100

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Introduction

This document describes the recovery procedure of vEdge-5000 or ISR1100 series (ISR1100-4G/ISR1100-6G) routers in case if the device can not boot the operating system.

Problem

The device is unable to start. If you connect to console, you might see one of these messages on your screen:



```
telnet 192.168.1.1
>>Checking Media Presence.....
>>Media Present.....
>>Start PXE over IPv4.
   PXE-E18: Server response timeout.
ERROR: Boot option loading failed

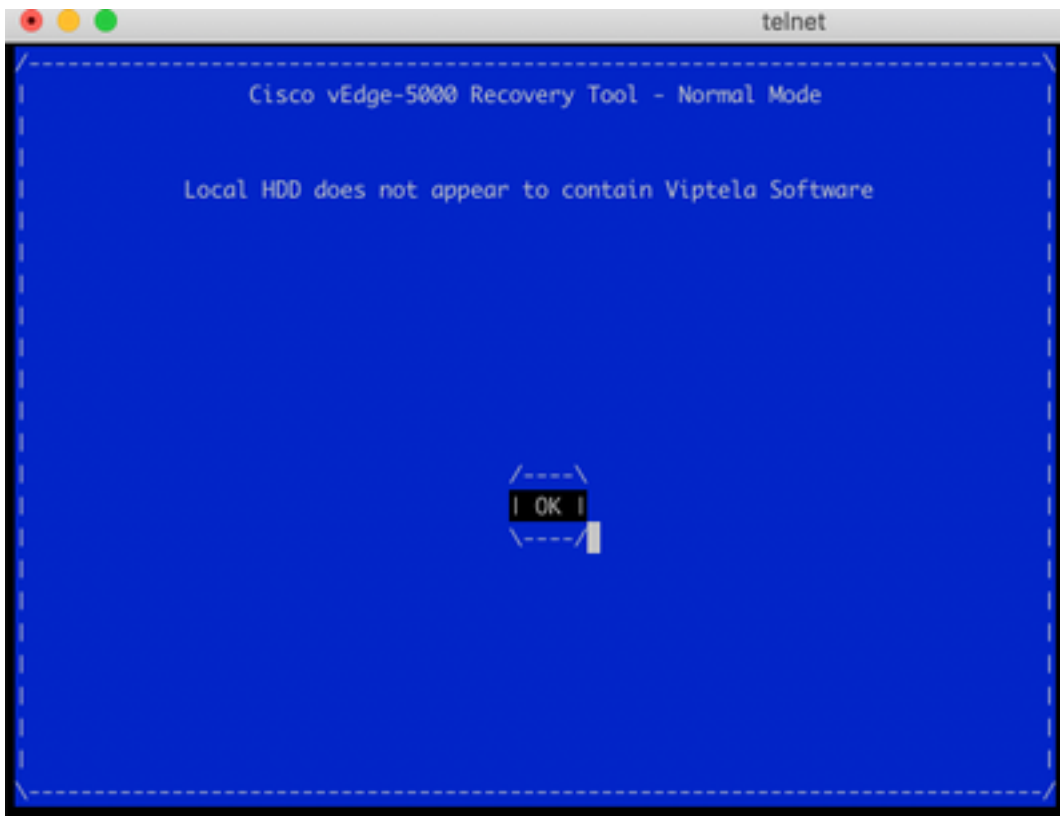
Loading software...|
```

You might also see that the device is booted to the Recovery Tool as shown in the image.

```
Cisco vEdge-5000 Recovery Tool

/-----\
| Boot vEdge Software (Normal Boot) |
| Clean Install vEdge Software (From USB) |
| View Installed Certificates |
| Reboot |
\-----/
```

If you select **Boot vEdge Software (Normal Boot)** from the menu and the device is unbootable, you see:



Attempt to reboot, or hard reset by long-pressing the reset button with a sharp narrow tool will not help.

Solution

In order to recover the device, you need to prepare a bootable USB drive:

1. Format USB drive as MS-DOS (FAT32) file system.
2. Obtain a software image from the [software.cisco.com](https://software.cisco.com/download/home/286320995/type/286321394/release/19.2.2) and save it on your PC/laptop. Here, for example, vSmart, vEdge Cloud, vEdge 5000, ISR1100 series and vBond upgrade image **viptela-19.2.2-x86_64.tar.gz** are found here:
<https://software.cisco.com/download/home/286320995/type/286321394/release/19.2.2>
3. Copy **viptela-19.2.2-x86_64.tar.gz** to the USB drive and rename to **viptela-image-genericx86_64.tar.gz**.
4. Create **/EFI/BOOT/** directory on the USB drive.
5. Extract **viptela-19.2.2-x86_64.tar.gz** on your PC/laptop locally with any unarchiver. For example, use tar CLI utility:

```
$ tar -xvf viptela-19.2.2-x86_64.tar.gz
x md5sum
x rootfs.img
x rootfsimg.sig
x vmlinuz
x crash.kernel
x bootx64.efi
x sigs/
```

```
x sigs/3.sig
x sigs/1.sig
x sigs/2.sig
x sigs/5.sig
x sigs/4.sig
x sigs.vip
x image-signing.crt
x cisco_crl.pem
```

6. Copy **vmlinuz** file to the USB disk drive.

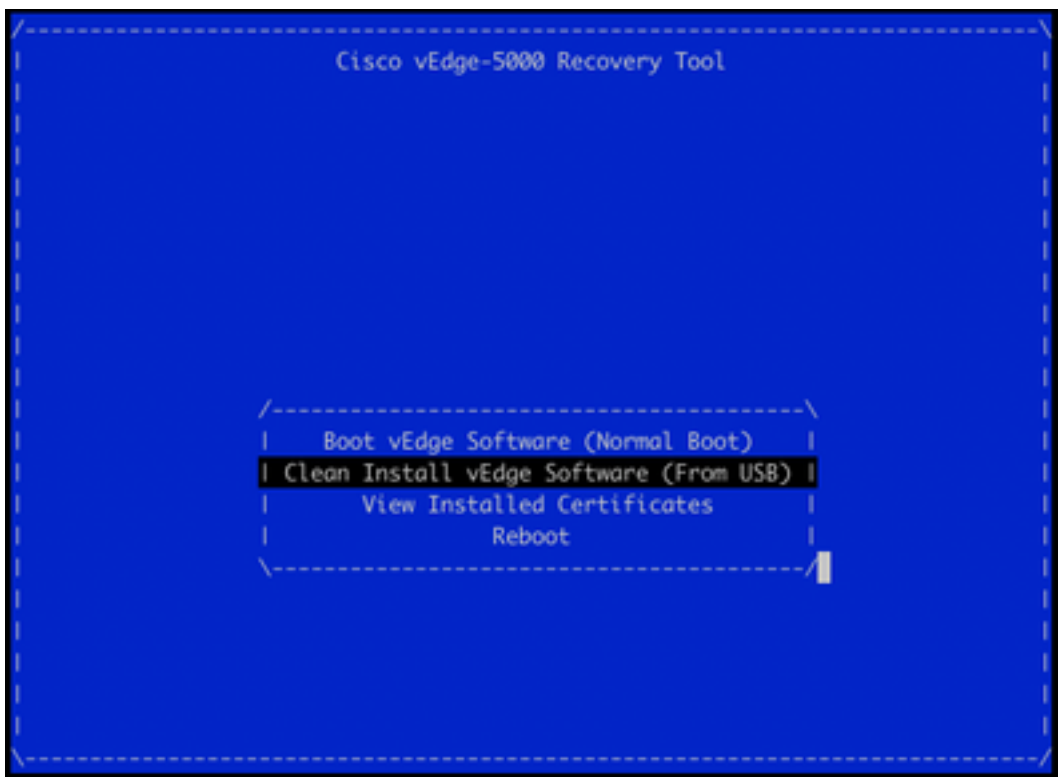
7. Copy **bootx64.efi** to the **/EFI/BOOT/** disk.

Finally, the content of the USB disk must look like this:

Name	Date Created
EFI	Today at 12:42
BOOT	Today at 12:43
bootx64.efi	Today at 12:42
viptela-image-genericx86_64.tar.gz	22 Jun 2020 at 22:23
vmlinuz	Today at 12:42

8. Insert this boot drive into the USB slot of the vEdge-5000 or ISR1100 series router. It will be detected automatically.

9. If you see this menu when connected to device console, select **Clean Install vEdge Software (From USB)** as shown in the image.

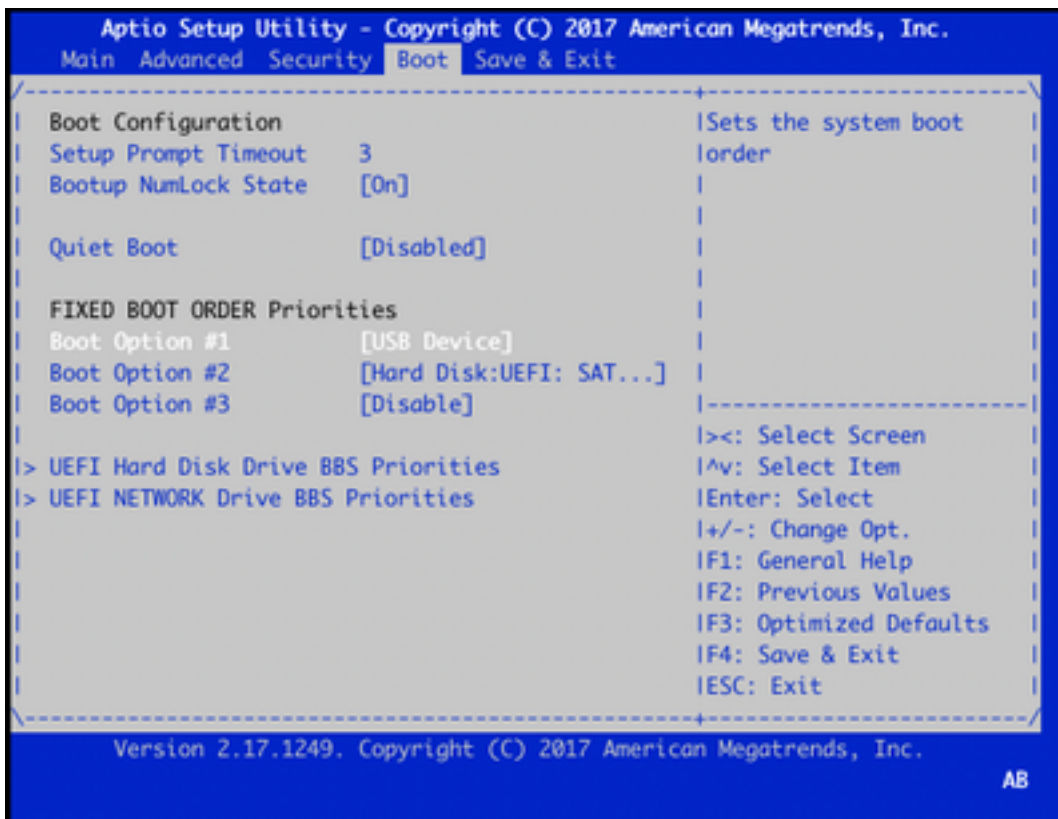


And continue to Step number 14.

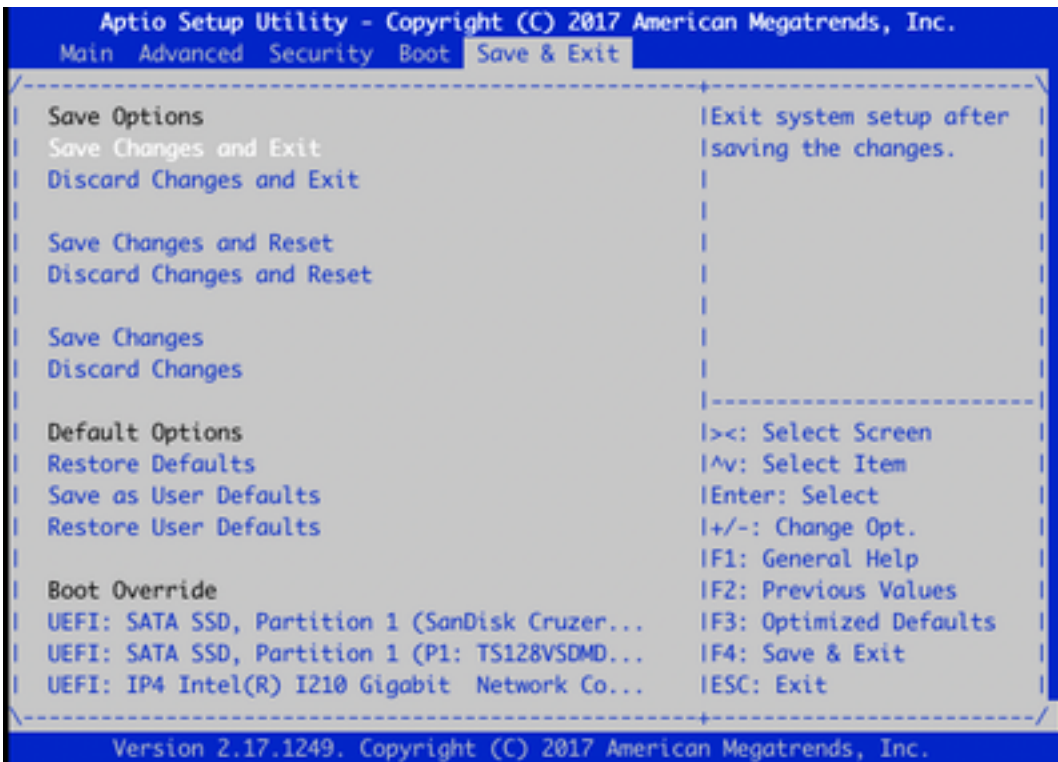
10. If you do not see the Recovery Tool menu, you need to specify USB in a boot order of the BIOS settings. Reboot the device and you see initialization prompt as shown in the image.

```
TAB Key on Remote Keyboard To Enter Setup Menu
Version 2.17.1249. Copyright (C) 2017 American Megatrends, Inc.
Viptela vEdge-S000 Ver. VIP5000.P01 11/22/2017
Press <DEL> or <ESC> to enter setup.
```

11. Press **** or **<ESC>** button in order to enter to the BIOS, then navigate to **Boot** section of the menu with arrow keys on the keyboard and set **[USB Device]** as a first boot option as shown in the image.

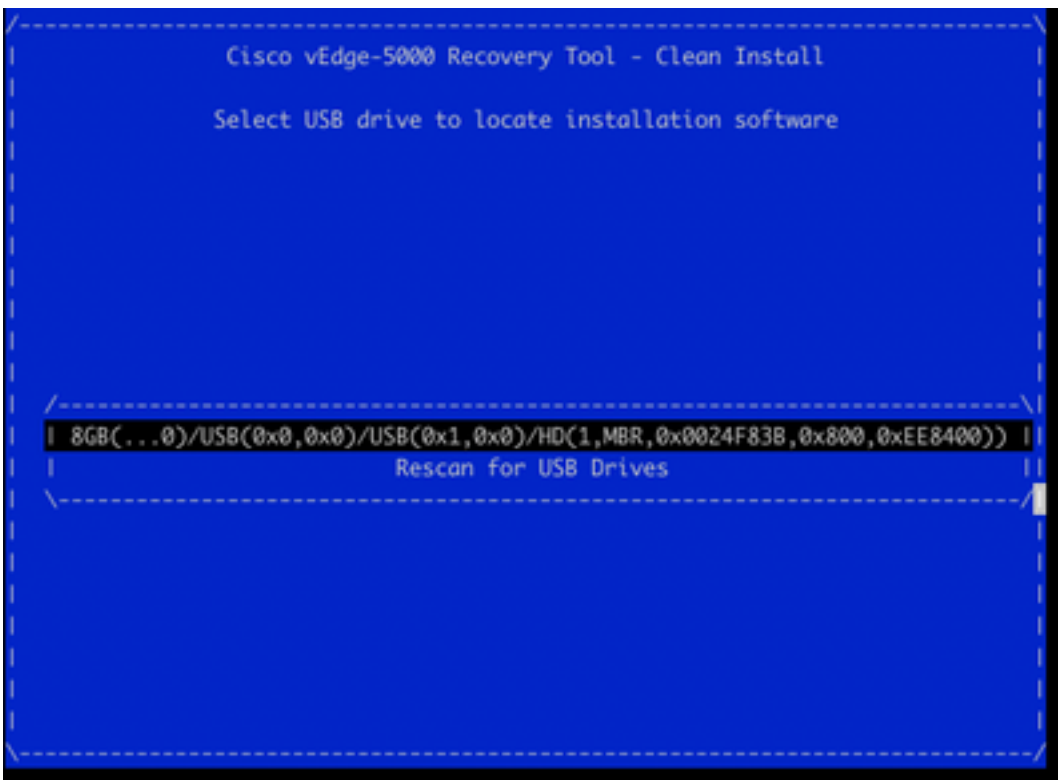


12. Then navigate to **Save & Exit** and select **Save Changes and Exit** from the menu with help of arrow keys and select enter as shown in the image.

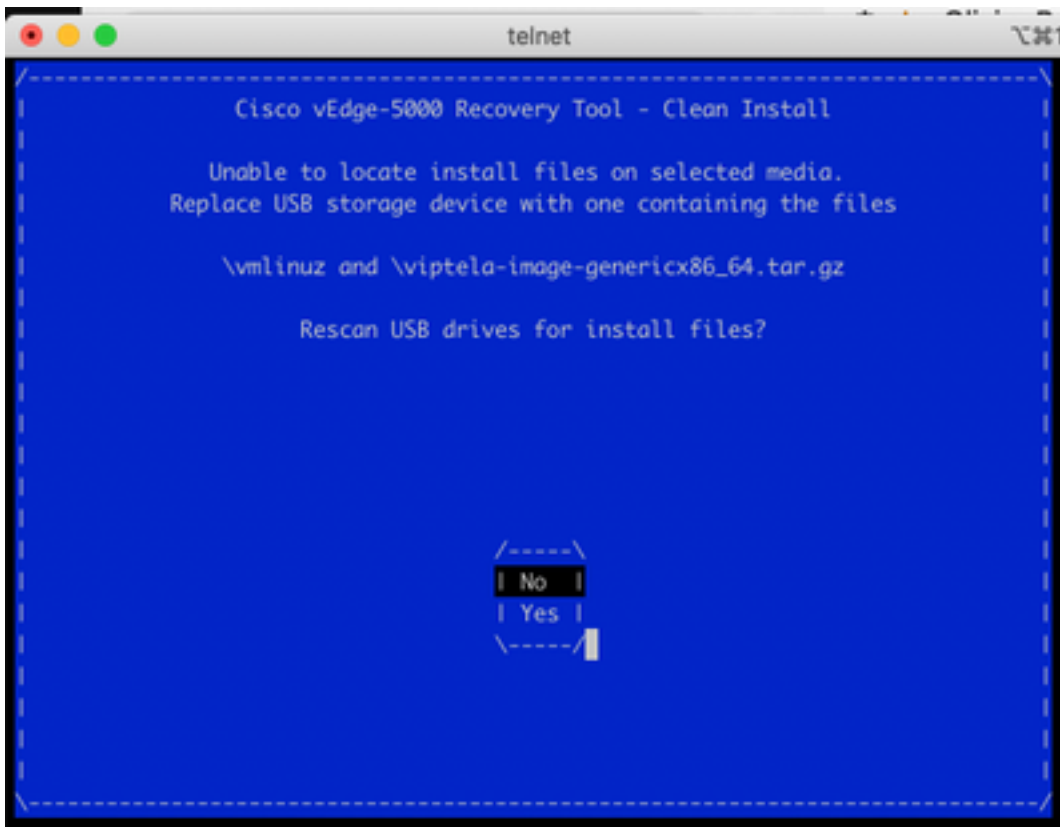


13. You must see the Recovery Tool menu from Step 9.

14. USB Drive is detected automatically if formatted properly and you will see a similar output as shown in the image.

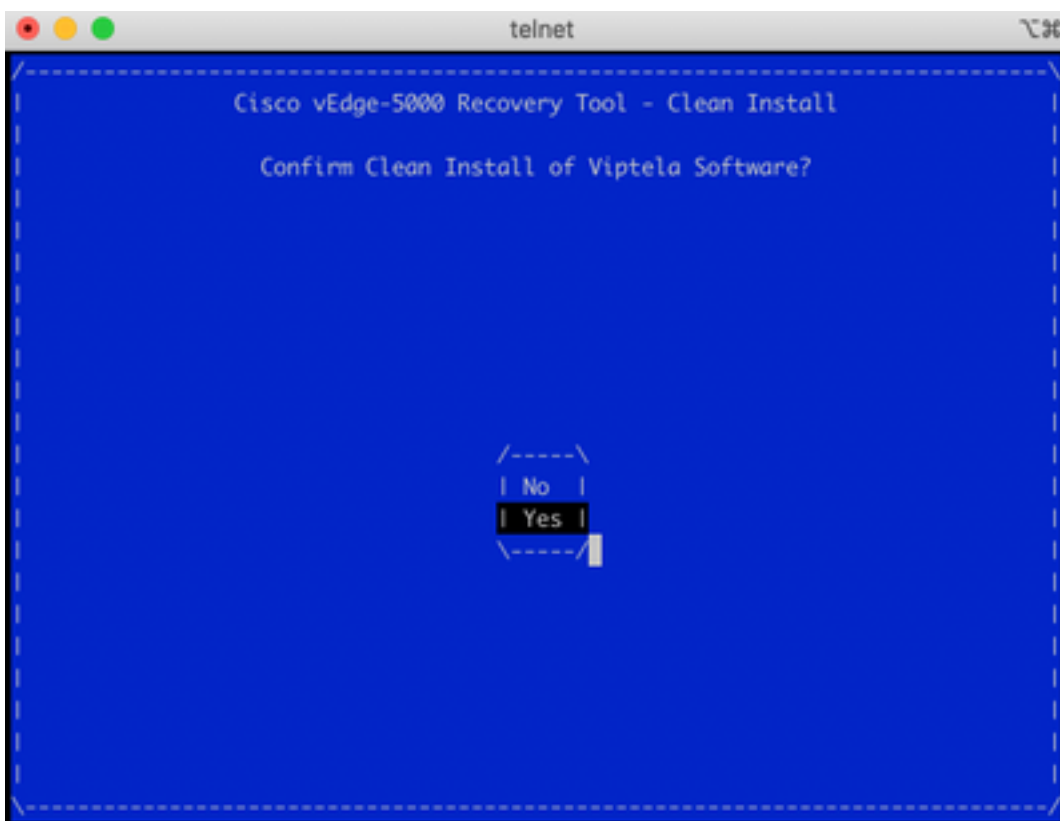


15. If steps 1-8 are not completed successfully (e.g. wrong file system, incorrect file names are given or directory structures were made), you will see this:



Double-check if steps 1-8 were completed successfully and repeat the process. If you still experience any issues, contact Cisco TAC for assistance.

16. If Recovery Tool finds all required files on the USB drive, you see the next screen, select **Yes** as shown in the image in order to continue the installation.



The device attempts an installation process and reloads twice. Do not interrupt this process.

17. If the device is able to reinstall the software, you finally see a welcome prompt as shown in the

image.

```
Opts: data-ordered
Mounting aufs at /rootfs
Loading ENA driver ....ena: Elastic Network Adapter (ENA) v1.5.0g
done
Mounting pseudo filesystems...
Setting up hotplug...
Mounting filesystems...
Setting hostname...
Configuring kernel parameters...
Configuring network interfaces...
Setting up syslogd service..
Setting up klogd service..
Verifying current time against timestamp...
Setting up log files...
Checking 10G ports for NVM flash update ... done
Starting services...
proc fs opened successfully
acpid: starting up with proc fs
parsing conf file /etc/acpi/events/powerbtn
acpid: 1 rule loaded
acpid: waiting for events: event logging is off

viptela 19.2.2
vedge login: █
```

For ISR1100 this means that the device is recovered successfully and you can start the configuration from scratch. For vEdge-5000 check next section.

Extra steps to recover vEdge-5000

On vEdge-5000 it is also required to reset TPM chip. If this is not done, Board ID will be not initialized and vEdge-5000 won't be able to establish control connections. You may see output as below:

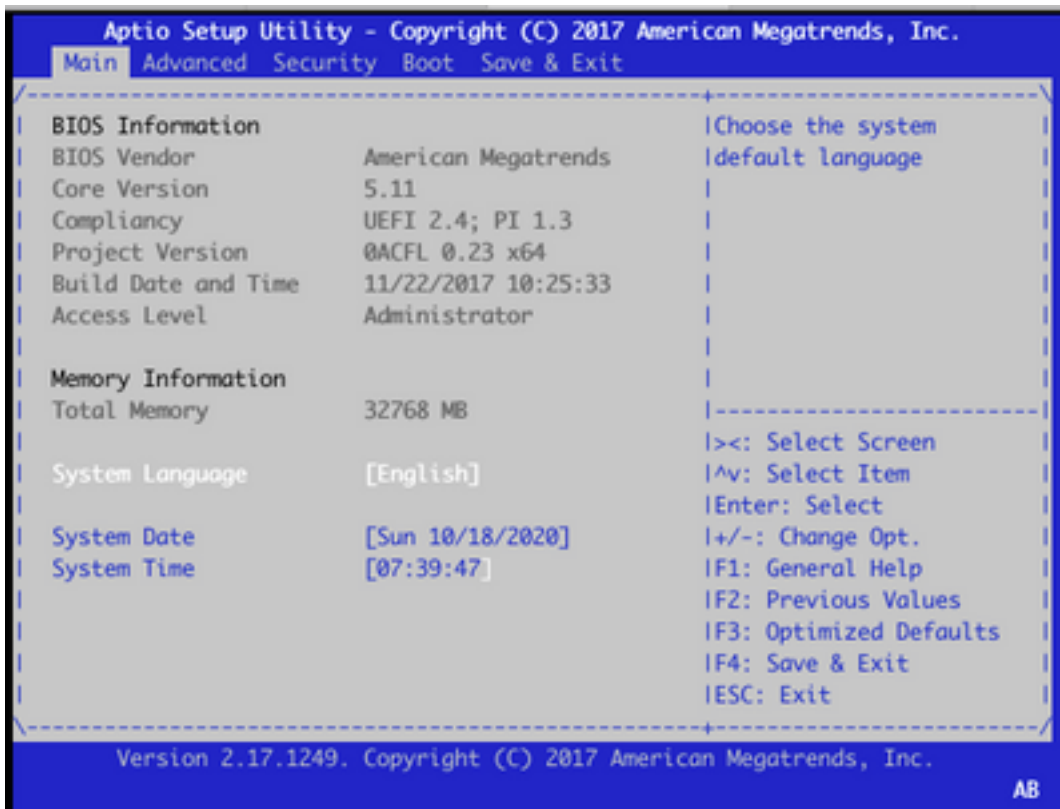
```
BRU-SDW-V5K-01# show control local-properties | i ^serial-num serial-num BOARD-ID-NOT-INITIALISED
```

To fix this:

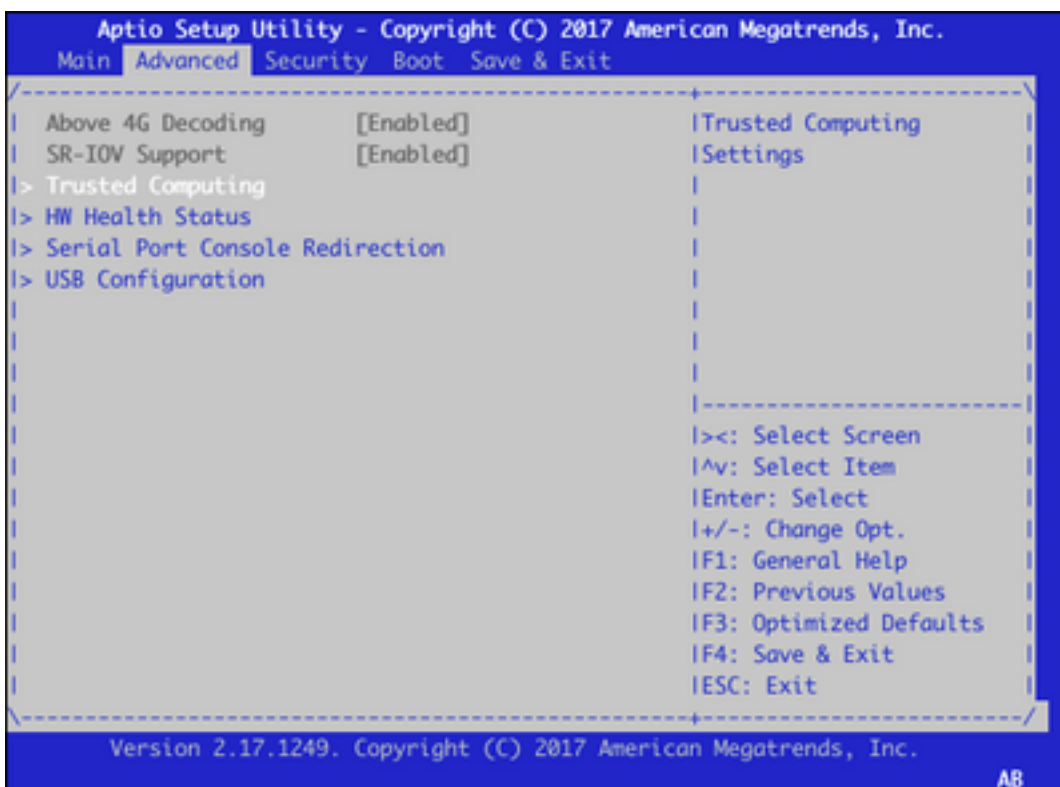
1. Connect to console and reboot the device to enter BIOS (press **DEL** or **ESC** key here):

```
TAB Key on Remote Keyboard To Enter Setup Menu
Version 2.17.1249. Copyright (C) 2017 American Megatrends, Inc.
Viptela vEdge-5000 Ver. VIP5000.P01 11/22/2017
Press <DEL> or <ESC> to enter setup.
Loading software... █
```

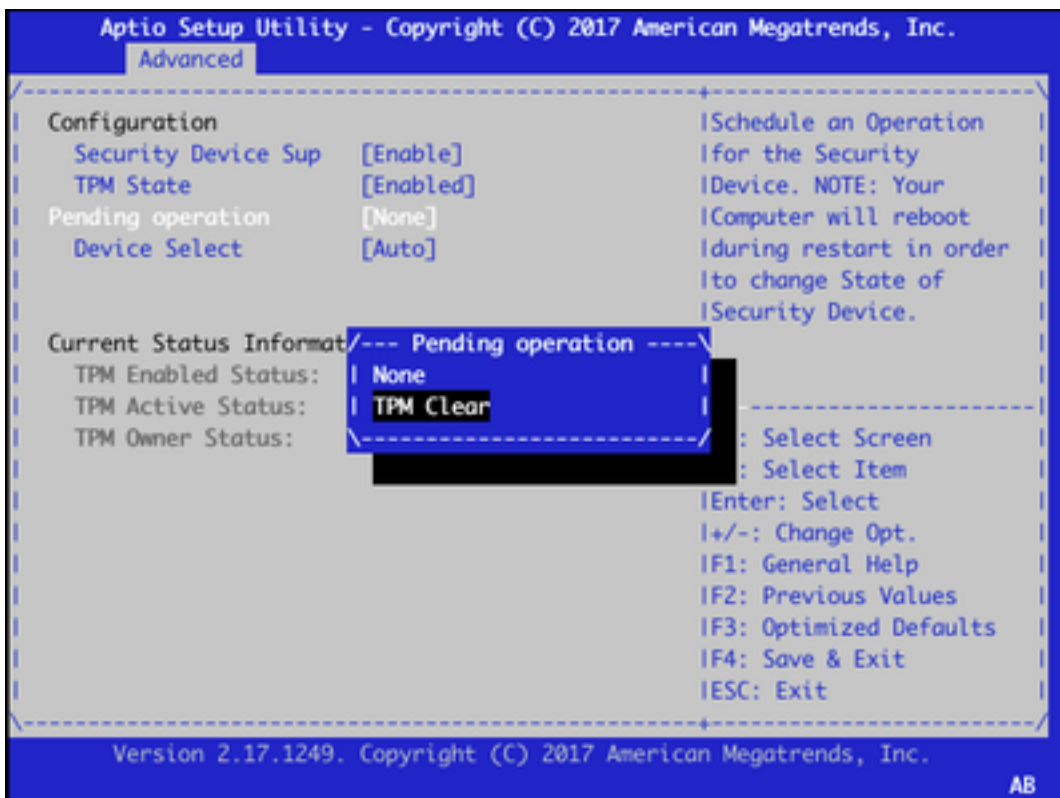

2. You see BIOS screen. Select **Advanced** tab with arrow keys:



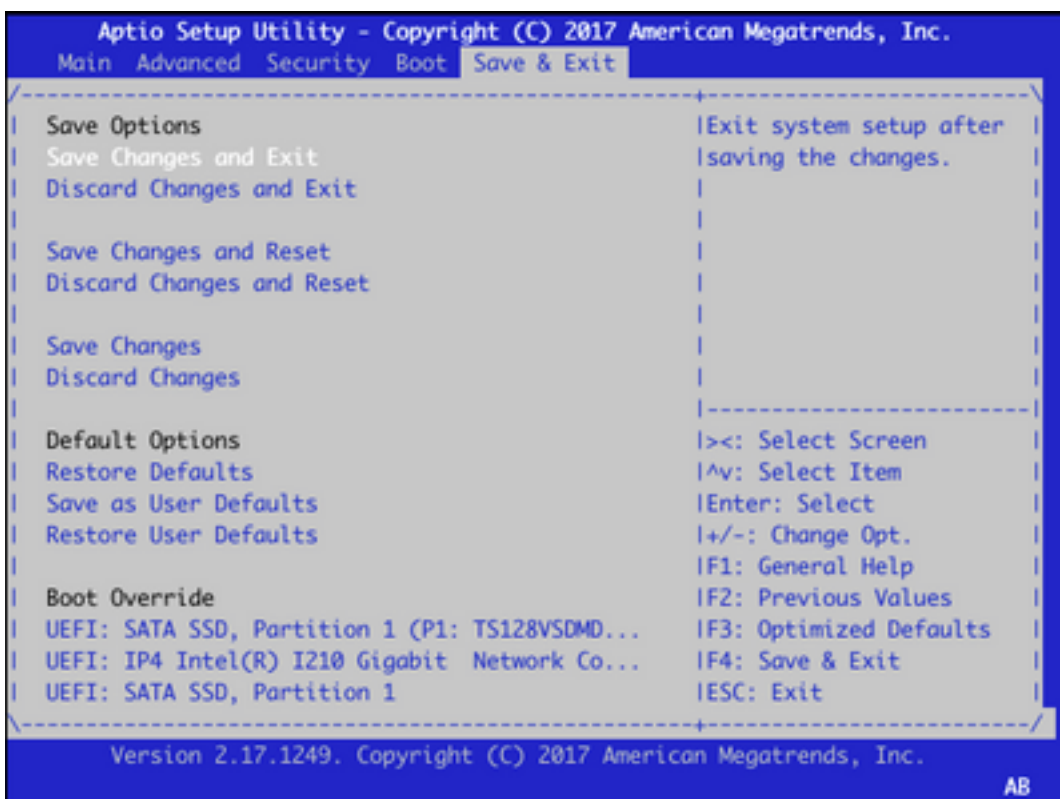
3. On **Advanced** tab, select **Trusted Computing** menu entry and press **Enter** key:



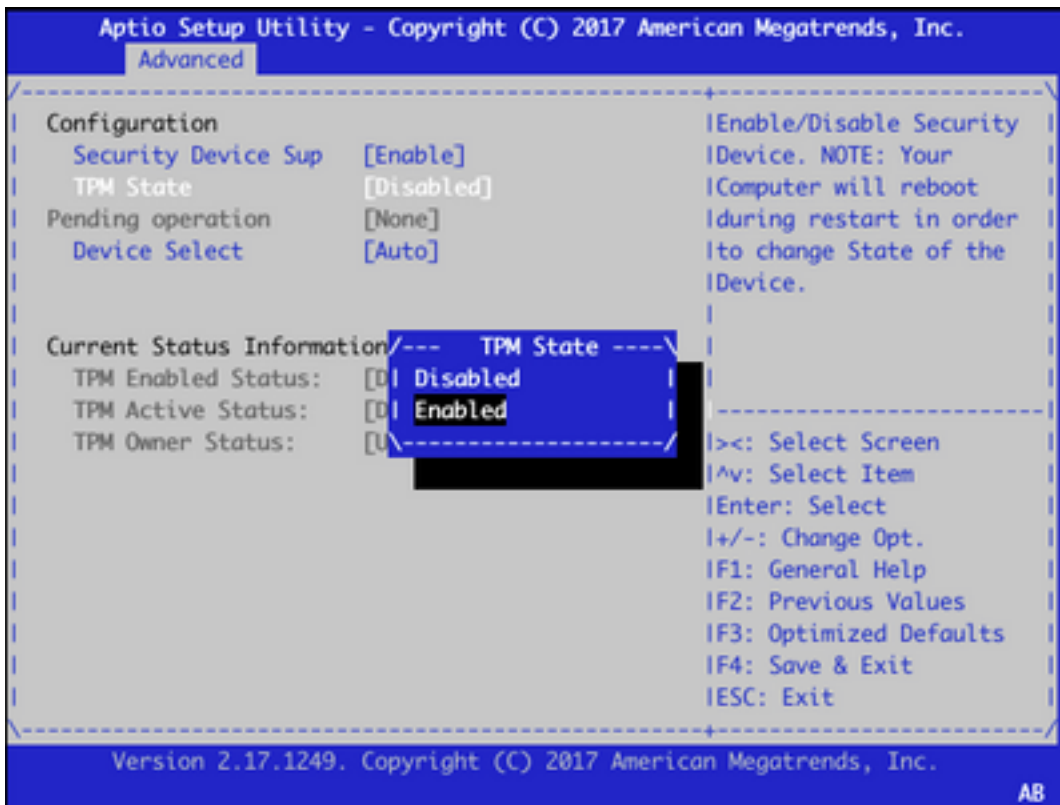
4. On appeared screen select **Pending operation** and press **Enter** key and select **TPM Clear** from the menu:



5. Next, press **F4** to save settings or with help of arrow keys navigate to **Save and Exit** tab and select **Save Changes and Exit** from the menu.



6. Device is reloaded, repeat steps 1-3 to enter the BIOS and navigate to **Advance** tab again. Here enable TPM again as on the screenshot here by selecting **TPM State** from the menu and changing state to **Enabled** in the appeared menu:



7. Repeat step 5 to save settings.

When device rebooted, recovery procedure is completed and TPM chip will be reinitialized and you can start the configuration from scratch.