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HXGN MINEPROTECT OPERATOR ALERTNESS SYSTEM

Installation of OAS Image on CoreLP Computer

Version 1.1

May 2021

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Table of Contents

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Revision History

Version	Date	Revised By	Checked By	Comments
1.0	November 26, 2020	Daryn Stickler		Original Draft
1.1	May 5, 2021	Daryn Stickler		Updated to V6.1 SW

Introduction

Welcome to the HxGN MineProtect Operator Alertness System (OAS) Installation of OAS Image on CoreLP Computer document. This document is intended as a supplement to the HxGN MineProtect OAS on CoreLP with PortPro Installation Guide and the CoreLP: Enabling Serial Console after Installation of FMS Image document. The following procedure is intended for CoreLP units not yet installed with an OAS image and will outline the steps required for loading the OAS image onto a CoreLP computer.

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Required Cables for Loading OAS Image

Initial CoreLP shipments are not guaranteed to include the OAS image pre-installed on the CoreLP computers. The following 2 cables are required for this process:

Figure 1: M8 to USB Cable - SAP:865263

Figure 2: Serial Splitter Cable - SAP: 865675

If the laptop or computer being used to connect to the CoreLP computer does not have a Serial Port built in, an additional Serial DB-9 RS-232 to USB cable will be required as well. These can be acquired at most electronics stores and will look like the cable below:

Figure 3: Serial DB-9 RS-232 to USB Cable

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Verifying Computer COM Port

To connect to the CoreLP computer via the Serial Port, the specific COM port the laptop being used to connect to the CoreLP computer is required. To find what COM port the laptop is using, utilize the Windows Control Panel to access the Device Manager as shown in *Figure 4*.

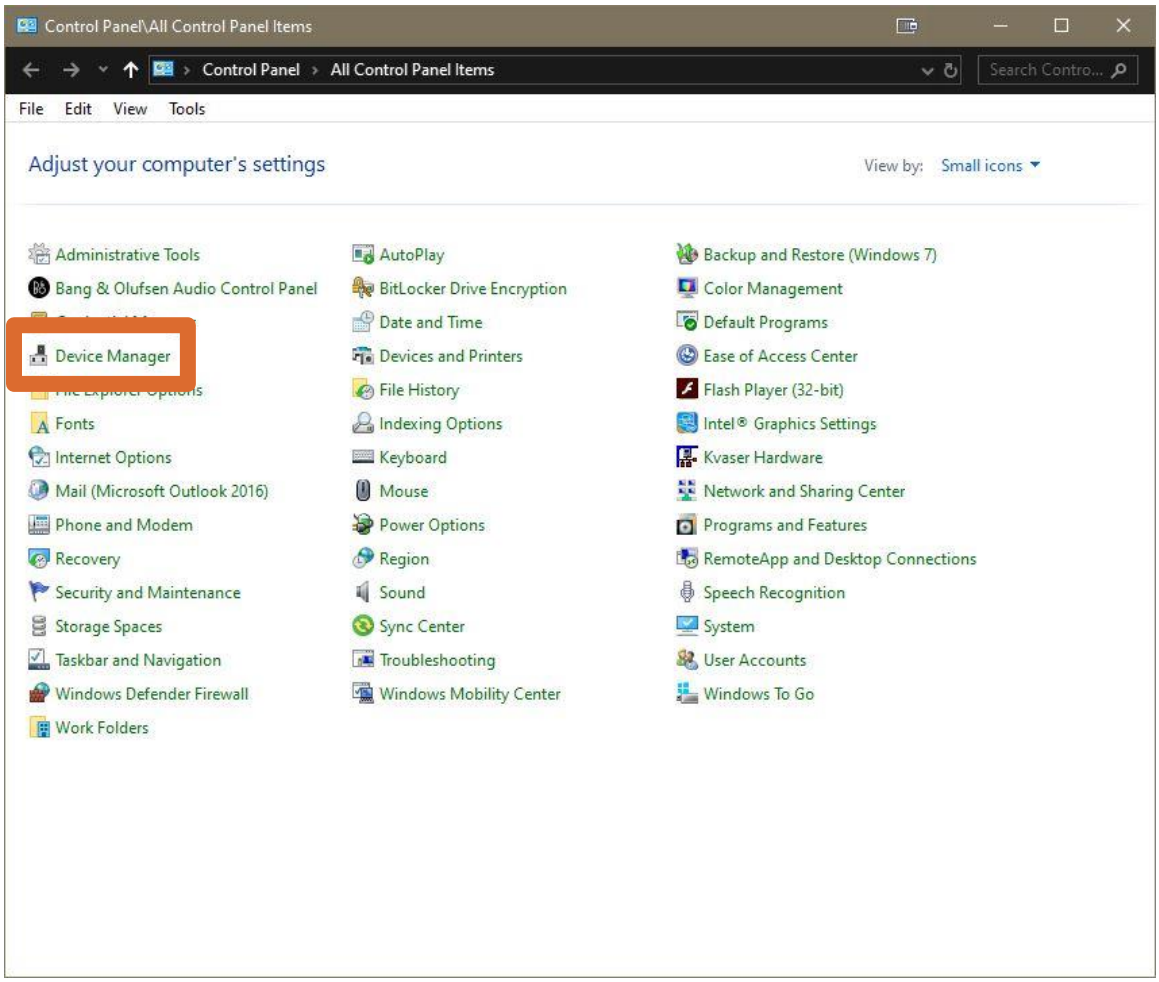

Figure 4: Control Panel - Device Manager Option

40 E Congress St #300

Tucson, AZ 85701

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Within the Device Manager, there is a drop-down menu for the Ports (COM & LPT) option. Expand this dropdown menu to see the list of COM ports currently in use on the laptop. The port required for the next steps will be listed with the name of either the Serial Cable or the USB-to-Serial cable utilized. If using the cable provided in *Figure 3*, the cable will provide a label of “Prolific USB-to-Serial Comm Port” as shown below in *Figure 5*.

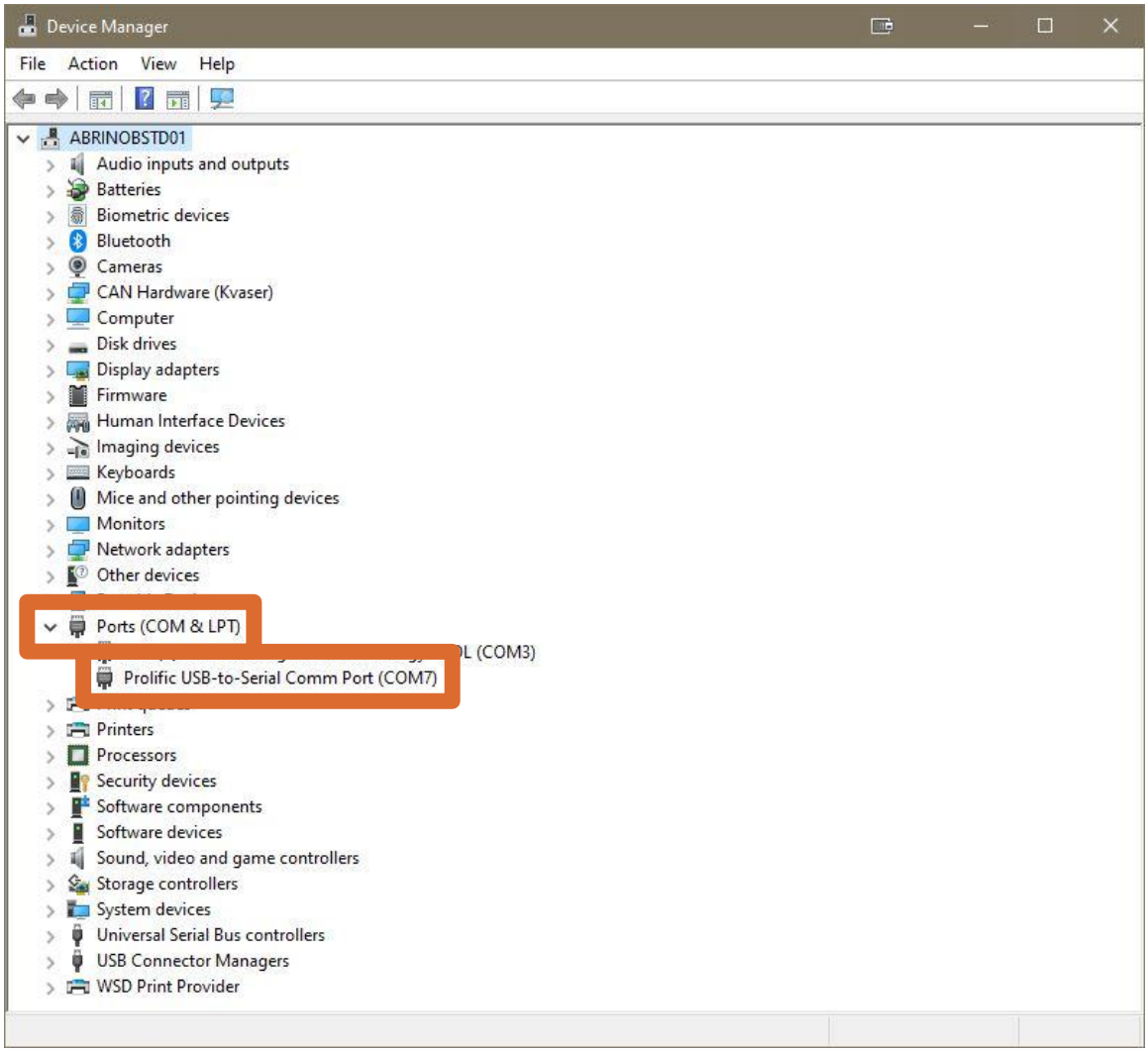

Figure 5: Device Manager - Ports (COM & LPT) Option

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Installing OAS Image on CoreLP Computer

A bootable USB drive with the OAS Image is required. After creating the bootable USB, copy the gvpc-x86_64-6.1-16.tar.gz file to the USB as shown in *Figure 6*. If checking via command line, an additional file of 'System Volume Information' will be present which is fine.

```
darynpc@ABRINOBSTD01:/mnt/d$ ls -l
total 85294
drwxrwxrwx 1 root root      512 Mar  5 13:25 'System Volume Information'
drwxrwxrwx 1 root root      512 Mar  5 13:06  boot
drwxrwxrwx 1 root root      512 Mar  5 13:06  conf
-rwxrwxrwx 1 root root 17184251 Mar  5 13:26  gvpc-x86_64-6.1-16.tar.gz
```

Figure 6: USB Files Required

Once the required files are present on a USB drive, connect the Serial Splitter Cable in Figure 2 to the S1/S2 port on the CoreLP computer as shown below in *Figure 7*.

Figure 7: CoreLP S1/S2 Serial Port

Connect the Serial Splitter Cable to either a laptop directly or into a USB port on a laptop via the Serial DB-9 RS-232 to USB Cable as shown in *Figure 3*.

Connect the USB drive into the M8 to USB cable as shown in *Figure 1* on page 4 if this document and plug this cable in the USB port on the CoreLP computer as shown in *Figure 8* below.

Figure 8: CoreLP USB Port

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Open a Putty or other Terminal program session. Enter the COM port as found in the previous section and example shown in *Figure 5*. In the example used for this document, COM7 was required. Set the speed (baud rate) to 115200 as shown below in *Figure 9*.

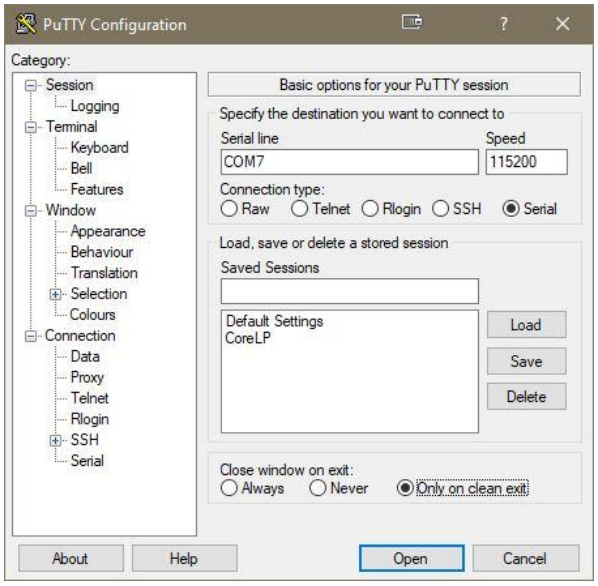

Figure 9: Putty Connection Setup

Power on the CoreLP computer and a stream of data should be visible in the Putty Terminal. Wait for this process to stop and a GNU GRUB window will come up. Select the “OpenWRT gvpc-x86_64-6.1 Installer” option as shown below in *Figure 10* to begin the OAS Image installation process.

Figure 10: OAS Image Installer

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Tucson, AZ 85701

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The OAS Image Installer will print out a stream of data prior to reporting a prompt to "…Install 6.1 on /dev/mmcblk0 (yes|no)?" as shown below in *Figure 11*. Type "yes" to continue the installation process.

...Install 6.1 on /dev/mmcblk0 (yes|no)? yes

```
[    0.158769] gpio_it87: no device
Press the [f] key and hit [enter] to enter failsafe mode
Press the [1], [2], [3] or [4] key and hit [enter] to select the debug level
    waiting for frame buffer
    frame buffer not available
    Loading system, please wait...
waiting for drives
[   16.100111] squashfs: SQUASHFS error: Xattrs in filesystem, these will be ignored
[   16.108486] squashfs: SQUASHFS error: unable to read xattr id index table
...Install 6.1 on /dev/mmcblk0 (yes|no)?
```

Figure 11: OAS Image Installer - Confirm Install

After confirming the installation of the OAS image, the installer process will ask if the user wants to "…Discard on-board database and video storage (yes|no)?" as shown below in *Figure 12*. Type "no" to continue the installation process.

...Discard on-board database and video storage (yes|no)? no

```
[    0.158769] gpio_it87: no device
Press the [f] key and hit [enter] to enter failsafe mode
Press the [1], [2], [3] or [4] key and hit [enter] to select the debug level
    waiting for frame buffer
    frame buffer not available
    Loading system, please wait...
waiting for drives
[   16.100111] squashfs: SQUASHFS error: Xattrs in filesystem, these will be ignored
[   16.108486] squashfs: SQUASHFS error: unable to read xattr id index table
...Install 6.1 on /dev/mmcblk0 (yes|no)? yes
...Discard on-board database and video storage (yes|no)?
```

Figure 12: OAS Image Installer - Confirm Discarding Database and Video Storage

Once the installation process completes, the CoreLP computer will reboot itself as shown in *Figure 13*.

```
    creating SSH keys
    installation complete
    rebooting in 5 seconds
    rebooting in 4 seconds
    rebooting in 3 seconds
    rebooting in 2 seconds
    rebooting in 1 seconds
[  135.788002] reboot: Restarting system
```

Figure 13: OAS Image Installer - System Reboot

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Upon completion of the CoreLP computer reboot, the GNU GRUB window will appear again. Since the OAS Image has already been installed, the first option of “OpenWRT on hard disk” can be selected as shown in *Figure 14* below.

Figure 14: OAS Image Selection

The boot-up process will print a long stream of data within the Putty Terminal. Upon completion, a “corelp login:” prompt as shown in *Figure 15* below will appear. If this prompt does not appear on its own, hit the “Enter” key to display the login prompt. The Username for the OAS on CoreLP computer running V6.1 software is “guardvant”.

corelp login: guardvant

Figure 15: Guardvant User Login

After entering the guardvant username, the system will request the password for the guardvant account. For V6.1, the default password remains “guard4640”. The password will be hidden as it is typed out as shown in *Figure 16*.

corelp login: guardvant
Password: guard4640 ***(this will be hidden while it is typed out)***

Figure 16: Guardvant User Login - Password

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Upon login, the OpenWrt 6 logo will be displayed and a guardvant@corelp command line will be visible as shown in *Figure 17*.

Figure 17: OAS on CoreLP - Logged In

Once the OAS Image has been loaded onto the CoreLP computer, the OAS software needs to be installed to complete the upgrade process. The OAS software can be installed either via the USB drive the OAS Image was installed from or via the GvManager software using a USB WiFi Dongle plugged into the PortPro device. Please refer to one of the following two sections that pertains to the method being used to load the OAS software.

40 E Congress St #300

Tucson, AZ 85701

T: +1 (520) 795-3891

Loading OAS Software via USB

The first option to load the OAS software onto the CoreLP computer is via the USB used to load the OAS Image. The first step in accessing the required file from the USB drive is to mount the USB to the CoreLP computer. To mount the USB, first run the following command to determine which device the USB has been named.

```
guardvant@corelp:~$ sudo fdisk -l
```

This command will list all current devices on or connected to the CoreLP computer. The device corresponding to the USB drive is listed in *Figure 18* below as /dev/sda1.

```
guardvant@corelp:~$ sudo fdisk -l
Password:
Disk /dev/mmcblk0: 28 GB, 29527900160 bytes, 57671680 sectors
901120 cylinders, 4 heads, 16 sectors/track
Units: sectors of 1 * 512 = 512 bytes

Device       Boot StartCHS    EndCHS        StartLBA     EndLBA    Sectors  Size Id Type
/dev/mmcblk0p1    32,0,1      543,3,16          2048      34815      32768 16.0M 83 Linux
/dev/mmcblk0p2    544,0,1     1023,3,16        34816    2131967    2097152 1024M 83 Linux
/dev/mmcblk0p3    1023,3,16   1023,3,16      2131968   57671679   55539712 26.4G 83 Linux
Disk /dev/sda: 58 GB, 62411243520 bytes, 121896960 sectors
15724 cylinders, 136 heads, 57 sectors/track
Units: sectors of 1 * 512 = 512 bytes

Device  Boot StartCHS    EndCHS        StartLBA     EndLBA    Sectors  Size Id Type
/dev/sda1 *  0,32,33     14,135,57         2048     233471     231424  113M  6 FAT16
```

Figure 18: Mounting USB - Verifying Devices Connected

Once the device name the USB is listed as has been determined, a location to mount the USB drive to is required. To create the directory to mount the USB drive, the following three commands as shown in *Figure 19* will need to be executed in order.

```
guardvant@corelp:~$ cd /mnt/
guardvant@corelp:/mnt$ sudo mkdir usb
guardvant@corelp:/mnt$ sudo mount /dev/sda1 usb/
```

```
guardvant@corelp:~$ cd /mnt/
guardvant@corelp:/mnt$ sudo mkdir usb
guardvant@corelp:/mnt$ sudo mount /dev/sda1 usb/
```

Figure 19: Mounting USB - Creating Mount Point & Mounting USB

After mounting the USB to the /mnt/usb directory, verify the required files are present and the USB mounted properly by executing the following command as shown in *Figure 20*.

```
guardvant@corelp:/mnt/usb$ ls -l
```

```
guardvant@corelp:/mnt/usb$ ls -l
drwxr-xr-x    2 root     root          2048 Mar  5  2021 System Volume Information
drwxr-xr-x    3 root     root          2048 Mar  5  2021 boot
drwxr-xr-x    2 root     root          2048 Mar  5  2021 conf
-rwxr-xr-x    1 root     root      17184251 Mar  5  2021 gvpc-x86_64-6.1-16.tar.gz
```

Figure 20: Mounting USB - Verifying USB is Mounted

40 E Congress St #300

Tucson, AZ 85701

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Upon confirmation the USB drive is properly mounted on the CoreLP computer, the software upgrade file should be copied directly to the CoreLP computer. Any directory on the CoreLP computer can be chosen, but the /home/guardvant/ directory is the recommended location to copy the tar.gz file to. To copy this file from the USB drive to the CoreLP computer, the command shown in *Figure 21* should be executed.

```
guardvant@corelp:/mnt/usb$ rsync -avP gvpc-x86_64-6.1-16.tar.gz /home/guardvant/.
```

```
guardvant@corelp:/mnt/usb$ rsync -avP gvpc-x86_64-6.1-16.tar.gz /home/guardvant/
.
sending incremental file list
gvpc-x86_64-6.1-16.tar.gz
     17,184,251 100%   21.13MB/s    0:00:00 (xfr#1, to-chk=0/1)

sent 17,188,545 bytes  received 35 bytes  34,377,160.00 bytes/sec
total size is 17,184,251  speedup is 1.00
```

Figure 21: Mounting USB - Copying OAS Software file from USB to CoreLP Computer

After copying the tar.gz file to the /home/guardvant directory, it is best to verify the file has copied to the OAS Computer. To do so, change directories to the location the file was copied to and then list the files within the directory by executing the following two commands as shown in *Figure 22*.

```
guardvant@corelp:/mnt/usb$ cd /home/guardvant/
guardvant@corelp:~$ ls -l
```

```
guardvant@corelp:/mnt/usb$ cd /home/guardvant/
guardvant@corelp:~$ ls -l
-rwxr-xr-x    1 guardvan staff     17184251 Mar  5  2021 gvpc-x86_64-6.1-16.tar.gz
-rw-r--r--    1 guardvan staff          491 Jul 23 18:03 weston.ini
guardvant@corelp:~$
```

Figure 22: Installing OAS Software - Verifying OAS Software Copied from USB to CoreLP Computer

Once the tar.gz file has been confirmed as transferred to the CoreLP computer, the file can be installed by executing the command as shown in *Figure 23*.

```
guardvant@corelp:~$ sudo /sbin/owrt-update -y -tar gvpc-x86_64-6.1-16.tar.gz
```

```
guardvant@corelp:~$ sudo /sbin/owrt-update -y -tar gvpc-x86_64-6.1-16.tar.gz
Removing package gv_accelerometer from root...
Removing package gv_audio from root...
Removing package gv_barcode from root...
Removing package gv_cas from root...
Removing package gv_ccv_models from root...
Removing package gv_cellphone from root...
```

Figure 23: Installing OAS Software - Installation Command

After executing the command, a stream of data will print within the terminal window showing the process of the software installation. This stream of data will finish with the line below shown in *Figure 24*.

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Tucson, AZ 85701

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```
Configuring gv_scripts.
    starting /etc/init.d/gvrsync
    starting /etc/init.d/gvcleaner
    starting /etc/init.d/gvos
    starting /etc/init.d/gvproximity
Configuring gv_preco.
Configuring gv_accelerometer.
owrt-install: installed 44 packages for releases/gvpc-x86_64/6.1-16/
```

Figure 24: Installing OAS Software - Installation Complete Printout

To complete the OAS Image and software installation, a reboot of the CoreLP computer is required. To reboot the CoreLP computer, the execute the following command as shown in *Figure 25*.

guardvant@corelp:~$ sudo reboot -f

```
guardvant@corelp:~$ sudo reboot -f
Password:
[ 1184.358723] reboot: Restarting system
```

Figure 25: Installing OAS Software - Rebooting the CoreLP Computer

Once the CoreLP computer finishes rebooting, it is recommended to verify the current software of the CoreLP computer to ensure the OAS Image and software installation were successful. To verify the software version installed, execute the command as shown in *Figure 26*. If the installation was successful, the gvos version listed should read 6.1-16.

guardvant@corelp:~$ telnet localhost 4640

```
guardvant@corelp:~$ telnet localhost 4640


Entering character mode
Escape character is '^]'.

gvos 6.1-16>
```

Figure 26: Installing OAS Software - Verifying Software Version

After verifying the gvos software version, the telnet session can be closed by executing the command shown in *Figure 27*.

gvos 6.1-16> exit

```
gvos 6.1-16> exit
Connection closed by foreign host
guardvant@corelp:~$
```

Figure 27: Installing OAS Software - Closing Telnet Session

This completes the installation of OAS on CoreLP. At this stage, the OAS software is configured and runs exactly as it does on an OAS-HV or OAS-LV computer.

40 E Congress St #300

Tucson, AZ 85701

T: +1 (520) 795-3891

Installing OAS Software via WiFi Dongle

The process to install the OAS Software via the WiFi dongle on the CoreLP computer is very similar to that of the OAS-HV computer. Once the OAS image is installed on the CoreLP computer, plug the USB WiFi adapter shown in *Figure 28* into the USB port on the PortPro's USB port as shown in *Figure 29*.

Figure 28: USB WiFi Dongle

Figure 29: PortPro USB Port

Once the WiFi dongle is connected to the PortPro, power on the CoreLP computer. When the CoreLP computer is finished booting up, the WiFi dongle will broadcast a WiFi signal with an SSID of corelp. The connection is open, so no password is required. Connect to this WiFi signal and bring up a Chrome internet browser. The URL required to connect to the GvManager software is 192.168.2.1 as shown in *Figure 30* and will bring up the page as shown in *Figure 31*.

Figure 30: GvManager Software - Access URL

Figure 31: GvManager Software - Main Page

To load the OAS software file onto the CoreLP computer, select the "Software Update" option and a pop-up window will appear as shown in *Figure 32* asking the user to select the tar.gz file with the appropriate software file.

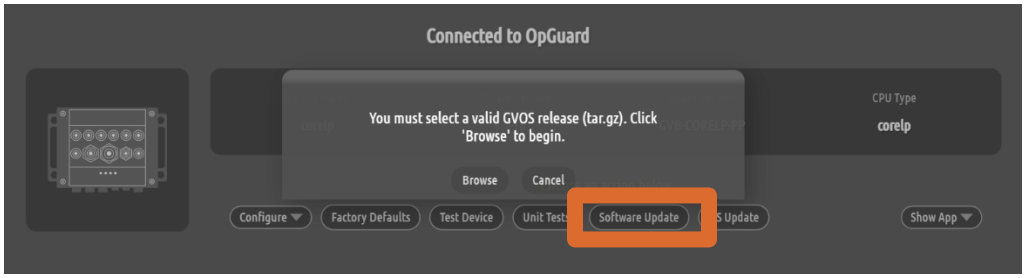

Figure 32: GvManager Software - Software Update Pop-Up Window

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Tucson, AZ 85701

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Go to the location within the computer being used to access GvManager where the appropriate tar.gz file is located. Select the appropriate file as shown in *Figure 33*.

Figure 33: OAS Software File

Once the software finishes installing, the main page should refresh showing the new software version listed. If the page does not auto-refresh, please refresh the browser manually. If the OAS Software install was successful, the “Software Version” component will display the version 6.1-16 as shown in *Figure 34*.

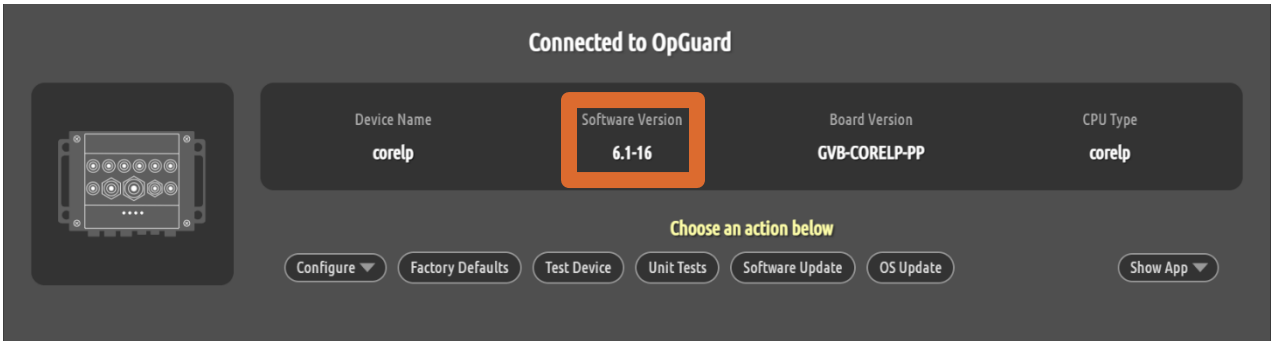

Figure 34: GvManager Software - OAS Software Version

This completes the installation of OAS on CoreLP. At this stage, the OAS software is configured and runs exactly as it does on an OAS-HV or OAS-LV.

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About This Manual

This manual was written by Hexagon. If you have any questions about this manual, please send an email to:

support@guardvant.com OR your site's assigned Project Engineer

Requirements: Hexagon recommends the following Linux based options:

Linux OS
Linux Subsystem for Windows
Cygwin
Putty (This software will also require a program like *WinSCP* for file transfers)

40 E Congress St #300

Tucson, AZ 85701

T: +1 (520) 795-3891

Figures Index