# Extreme Update Procedure

## SENSX EXTREME

# Legal Notices

FCC Compliance

This equipment has been tested and found to comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any change or modification to this product voids the user's authority to operate per FCC Part 15 Subpart A. Section 15.21 regulations.

Industry Canada Compliance

This device complies with Industry Canada License-exempt RSS standards. Operation is subject to the following two conditions: (1) this device may not cause interference and (2) this device must accept any interference, including interference that may cause undesired operation of the device. This device has been designed to operate with a variety of different gain (dBi). The reader maximum output power is set by the gain of the antenna. Using an antenna having a higher gain is strictly prohibited per regulations of Industry Canada. In addition, using the reader at a power exceeding the maximum output power for a given antenna is also strictly prohibited. The required antenna impedance is 50 ohms. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication.

Conformité d'Industrie Canada

Cet appareil est conforme aux normes RSS exemptées de licence d'Industrie Canada. L'opération est soumise aux deux conditions suivantes: (1) cet appareil ne doit pas provoquer d'interférence et (2) cet appareil doit accepter toute interférence, y compris les interférences susceptibles de provoquer un fonctionnement indésirable de l'appareil. Cet appareil a été conçu pour fonctionner avec une variété de gains différents (dBi). La puissance de sortie maximale du lecteur est définie par le gain de l'antenne. L'utilisation d'une antenne ayant un gain plus élevé est strictement interdite par règlement d'Industrie Canada. En outre, l'utilisation du lecteur à une puissance supérieure à la puissance de sortie maximale pour une antenne donnée est également strictement interdite. L'impédance d'antenne requise est de 50 ohms. Afin de réduire les interférences radio potentielles avec d'autres utilisateurs, le type d'antenne et son gain devraient être choisis de manière à ce que la puissance éloignée isotropiquement (EIRP) équivalente soit supérieure à celle requise pour une communication réussie.

Caution

Reader antennas should be positioned so that personnel in the area for prolonged periods may safely remain at least 31 cm (12.2 in) in an uncontrolled environment from the antenna's surface. See FCC OET Bulletin 56 "Hazards of radio frequency and electromagnetic fields" and Bulletin 65 "Human exposure to radio frequency electromagnetic fields."

Vorsicht

Reader Antennen sollten so positioniert werden, dass das Personal im Bereich über einen längeren Zeitraum kann sicher bleiben mindestens 31 cm (12.2 Zoll) entfernt von der Antenne Oberfläche, in einer unkontrollierten Umgebung. Siehe FCC OET Bulletin 56 "Gefahren der Radiofrequenz und elektromagnetische Felder" und Bulletin 65 "Human Exposition gegenüber hochfrequenten elektromagnetischen Feldern."

# Revision History

| Version | Author | Date | Changes |
|---|---|---|---|
| 1.0 | J. Major | Jan 2021 | Initial Document |
| 1.1 | J. Major | May 2021 | Add resolution for clock issue |
| 1.2 | J. Major | August 2021 | Using the RFID console to set clock |
| 1.3 | N.Mitchell | November 2021 | Updated copyright |
| 1.4 | N.Mitchell | March 2022 | Added checking for internet connection & cleaning certs |
| 1.5 | N.Mitchell | January 2023 | Added "Verify DNS Network Settings" |

# Table of Contents

# CHAPTER 1    Introduction

The document describes the upgrade procedure for the SensThys Extreme reader.
While the main upgrade commands are easy, we have also documented places where we has seen error messages and how to navigate those errors.
The output of this process is that your reader will be brought fully up to date with the latest Extreme software offered by SensThys.

# Chapter 2    Install

## Step 1    Find the reader IP address

First find the IP address of the Extreme. This can be done by using a program that listens to UDP broadcast message. If you have one, listen to port 3988. You will be able to see the "heartbeat" of your Extreme. From that heartbeat, find the IP address.
Otherwise launch the SensThys RFID Console, which can be found at SensThys.com. You can then easily find the IP Address.
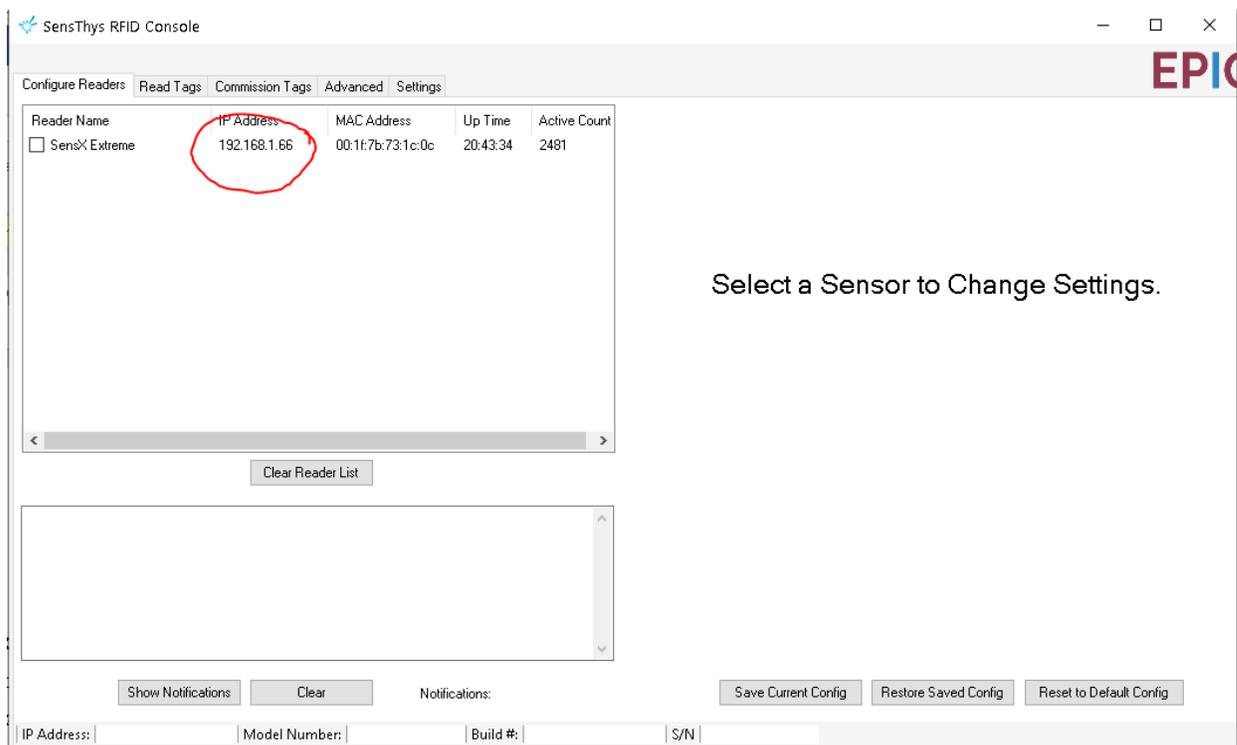


## Step 1.a    Setting the time on your Extreme

Go to the Advanced tab and select Features. Hit the "Set Reader Date/Time" button. In the column on the left, you'll see a confirmation that the reader time has been successfully set.
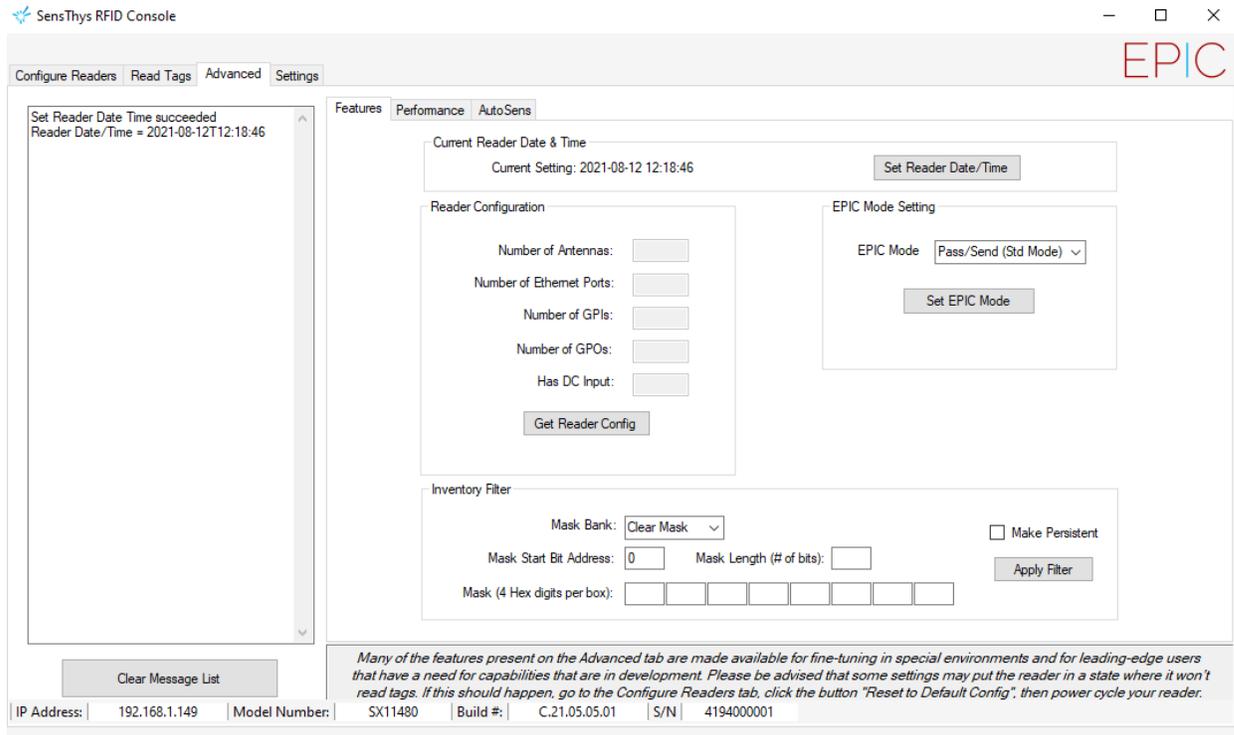
## Step 1b.    Verify DNS Network Settings

In ProSens, please select Networking. In the IPv4 Setup box, find the Gateway address and the DNS Server address. **If they are the same**, **please proceed to Step 2**.
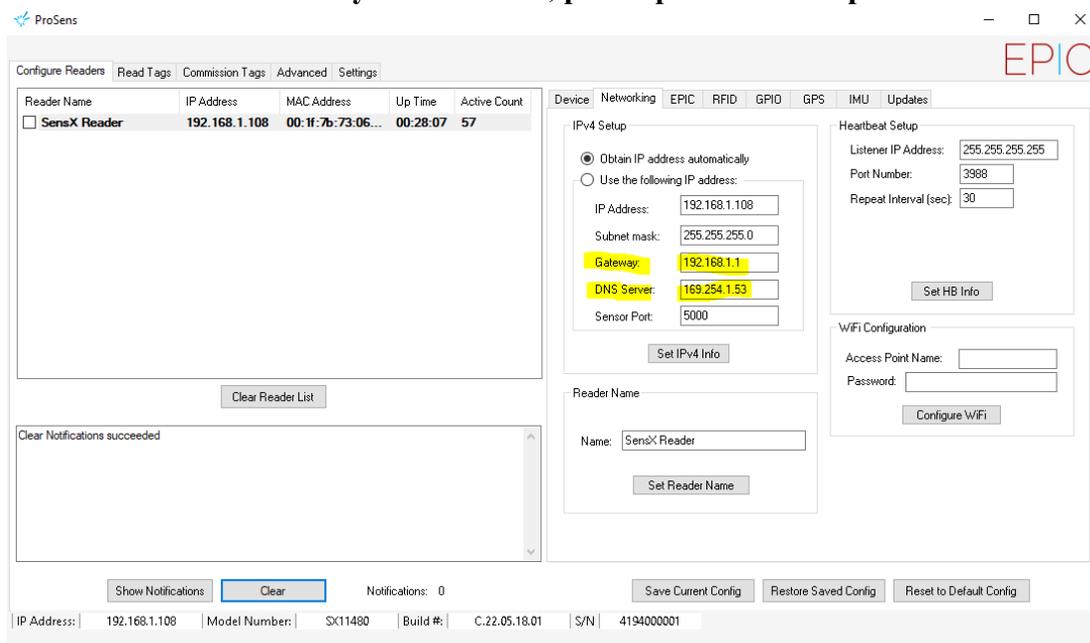
**If they are not the same**, please click "Use the following IP address" and manually type the address of the Gateway into the DNS server box. Now click "Set IPv4 Info" and you should see the acceptance of this IPv4 setting.
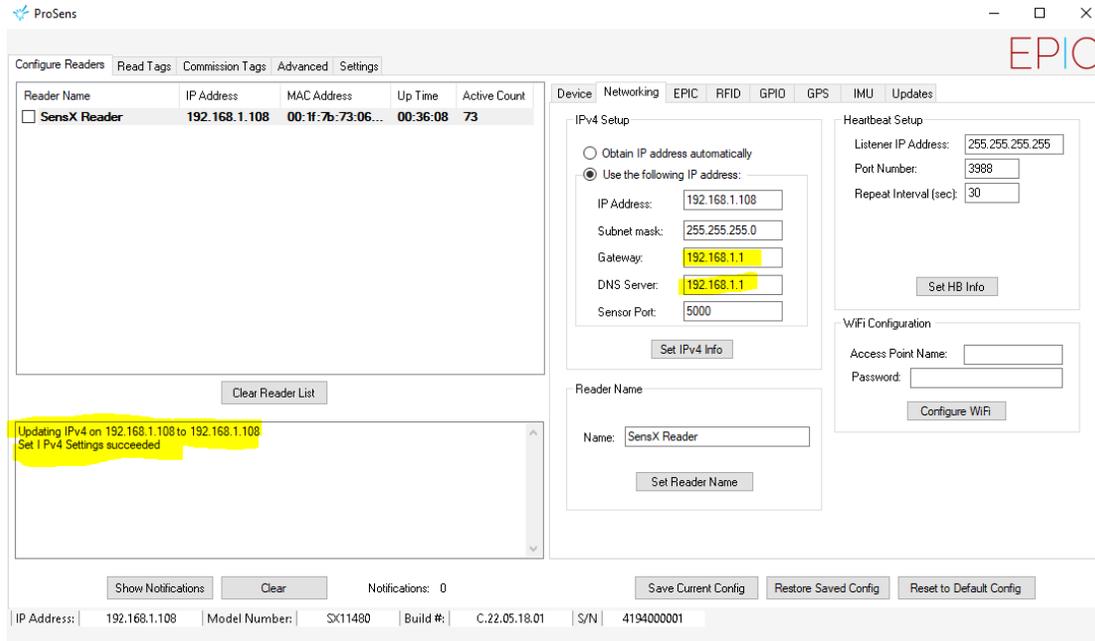


At this point, the reader can be returned to automatic mode. Click "Obtain IP address automatically" and then click "Set IPv4 Info".



Specifications Subject to Change          January 2023
                        V1.5 DCN-ST-0009-D
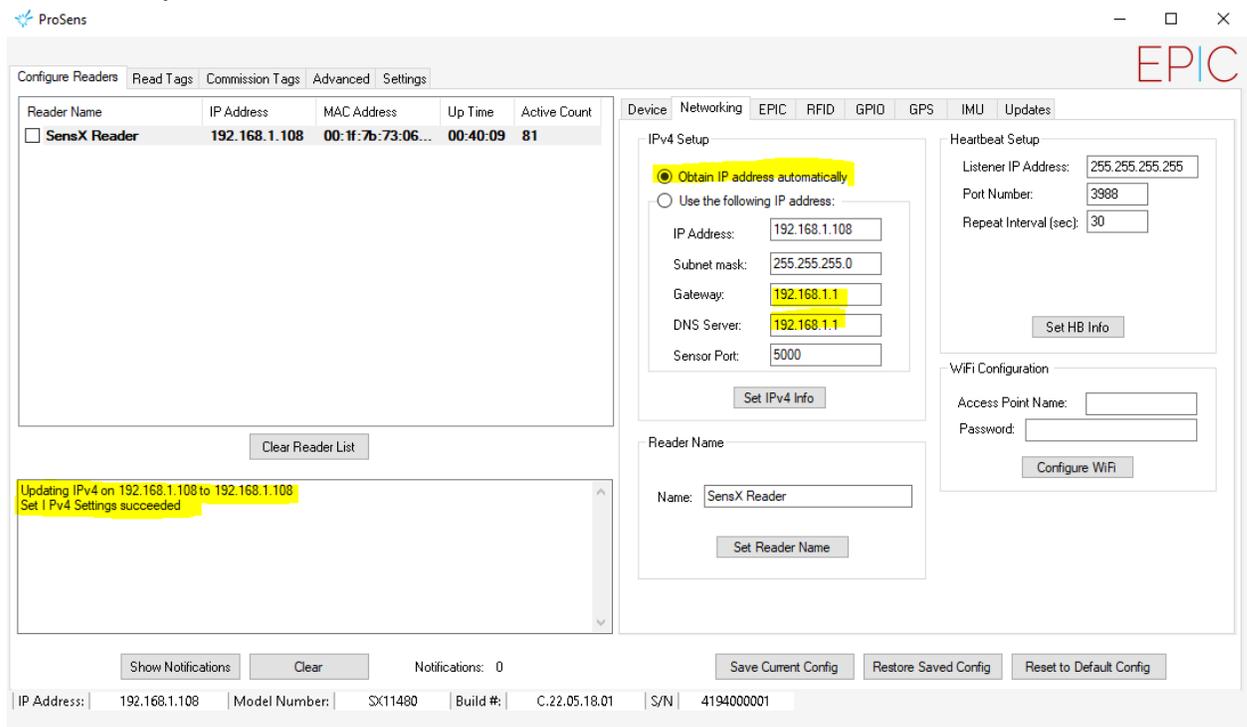
After this, the configuration is "Obtain IP address automatically", the Gateway and DNS server addresses are identical, and the notification panel shows that all went well.

## Step 2       Getting into your Extreme

Open the Command Prompt
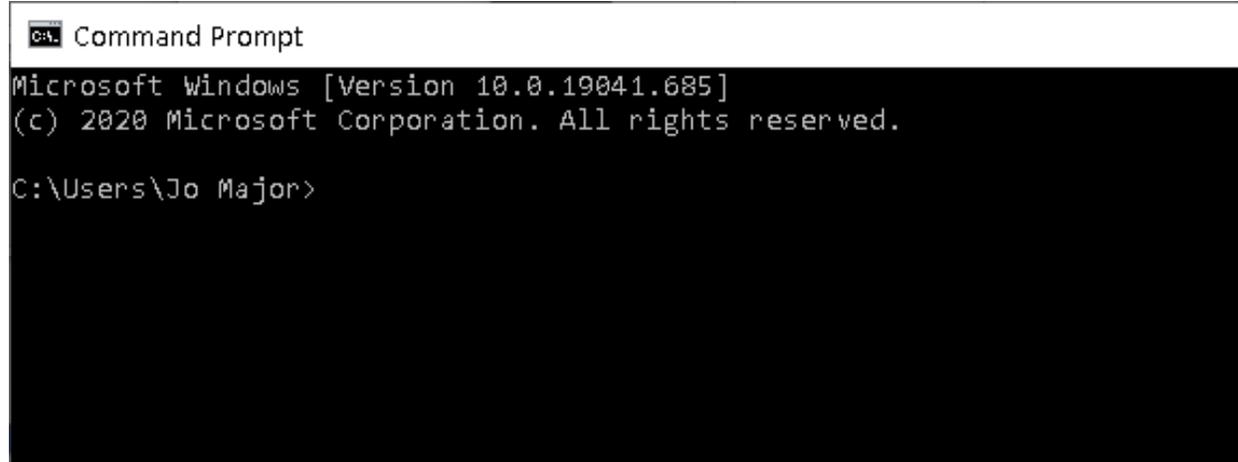


Type **ssh root@IP Address**. The IP Address is the address found in the RFID Console or your listener.

When you see "Are you sure…." type in yes.



Enter the password. The password is sensthys1701
NOTE: the password will not show, in any way, as you are entering it. This is what you'll see when successful.



## Step 3    Update Preparation

Check that the reader can access the internet (the fact your PC is connected to the internet is not sufficient). To do this type the following from the shell prompt on the reader:

**ping -c4 google.com**

If the reader cannot contact the network the user will see an error message indicating 100% packet loss. Solution:

- Make sure the wired LAN and/or Wi-Fi is set up properly and is connected to a router that can access the Internet.

- If this is ok, then the problem is likely to be with your DNS server or Gateway address. Find out IP addresses for these and input them into the Network tab as a fixed network setup rather than automatic. Retry the ping test.

After you have confirmed network access from the reader, type in **apt-get update** and enter.



This will launch a series of actions working through the various files of the Extreme. If all goes well, you should see the following screen.

```
OpenSSH SSH client

C:\Users\Jo Major>ssh root@192.168.1.68
The authenticity of host '192.168.1.68 (192.168.1.68)' can't be established.
RSA key fingerprint is SHA256:POPHWeXk1QoHkEvhP/8uEzzvEKfgCr0D4n87UjjqS8o.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.1.68' (RSA) to the list of known hosts.
root@192.168.1.68's password:
root@pico-imx6:~# apt-get update
Ign:1 https://www.sensthys.com extremepackage/ InRelease
Ign:2 https://www.sensthys.com fwpackage/ InRelease
Ign:3 https://www.sensthys.com bleserver/ InRelease
Ign:4 https://www.sensthys.com python3/ InRelease
Ign:5 https://www.sensthys.com extremepackage/ Release
Ign:6 https://www.sensthys.com fwpackage/ Release
Ign:7 https://www.sensthys.com bleserver/ Release
Ign:8 https://www.sensthys.com python3/ Release
Ign:9 https://www.sensthys.com extremepackage/ Packages.diff/Index
Ign:10 https://www.sensthys.com extremepackage/ Translation-en
Ign:11 https://www.sensthys.com fwpackage/ Packages.diff/Index
Ign:12 https://www.sensthys.com fwpackage/ Translation-en
Ign:13 https://www.sensthys.com bleserver/ Packages.diff/Index
Ign:14 https://www.sensthys.com bleserver/ Translation-en
Ign:15 https://www.sensthys.com python3/ Packages.diff/Index
Ign:16 https://www.sensthys.com python3/ Translation-en
Ign:17 https://www.sensthys.com extremepackage/ Packages
Ign:10 https://www.sensthys.com extremepackage/ Translation-en
Ign:18 https://www.sensthys.com fwpackage/ Packages
Ign:12 https://www.sensthys.com fwpackage/ Translation-en
Ign:19 https://www.sensthys.com bleserver/ Packages
Ign:14 https://www.sensthys.com bleserver/ Translation-en
Ign:20 https://www.sensthys.com python3/ Packages
Ign:16 https://www.sensthys.com python3/ Translation-en
Ign:17 https://www.sensthys.com extremepackage/ Packages
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Ign:18 https://www.sensthys.com fwpackage/ Packages
Ign:12 https://www.sensthys.com fwpackage/ Translation-en
Ign:19 https://www.sensthys.com bleserver/ Packages
Ign:14 https://www.sensthys.com bleserver/ Translation-en
Ign:20 https://www.sensthys.com python3/ Packages
Ign:16 https://www.sensthys.com python3/ Translation-en
Get:17 https://www.sensthys.com extremepackage/ Packages [366 B]
Ign:10 https://www.sensthys.com extremepackage/ Translation-en
Hit:18 https://www.sensthys.com fwpackage/ Packages
Ign:12 https://www.sensthys.com fwpackage/ Translation-en
Hit:19 https://www.sensthys.com bleserver/ Packages
Ign:14 https://www.sensthys.com bleserver/ Translation-en
Hit:20 https://www.sensthys.com python3/ Packages
Ign:16 https://www.sensthys.com python3/ Translation-en
Fetched 366 B in 1min 24s (4 B/s)
Reading package lists... Done
```

The successful response to the apt-get update command. If seen, please go to Step 4. Occasionally, this process will show error messages. you'll see that the reader has duplicate names in the file system. We list the errors know to us, and how to resolve them. Please contact us if you come across an error not discussed here.

## Step 3.1       *Fixing the "Configured Multiple Times"*



Here we see the "configured multiple times" message.

To start, please type:

**cd /etc/apt**

This changes the targeted directory and should return this screen.

Next type in nano sources.list



This will show you a list. Examining the following list, you'll see that the second and fifth lines are identical.



Using your arrow keys to erase the bottom line. That should give you this screen. On this screen please Exit using ^X as shown in the bottom left.

That will bring you to this screen. Note the line that says "File Name to Write: sources.list"

Hit Enter.
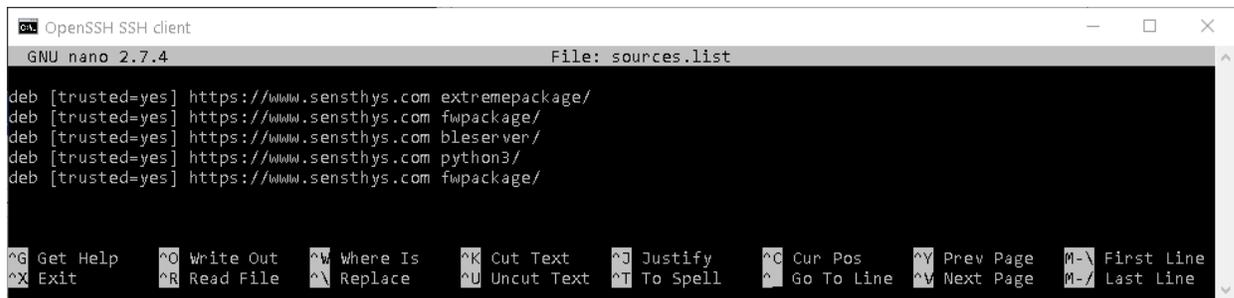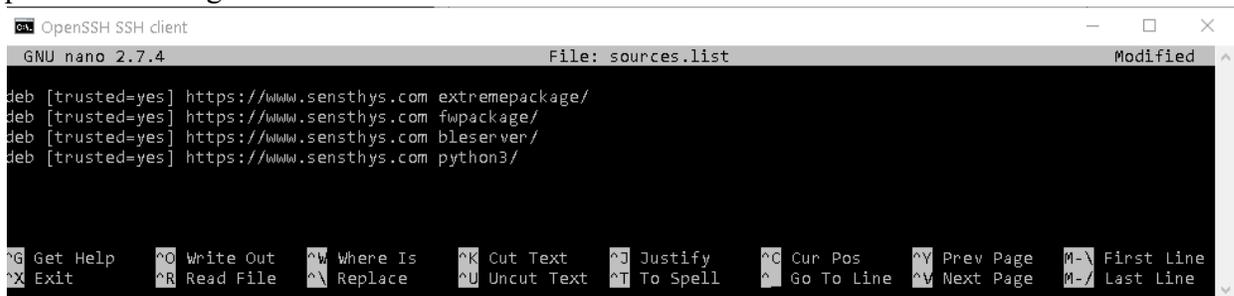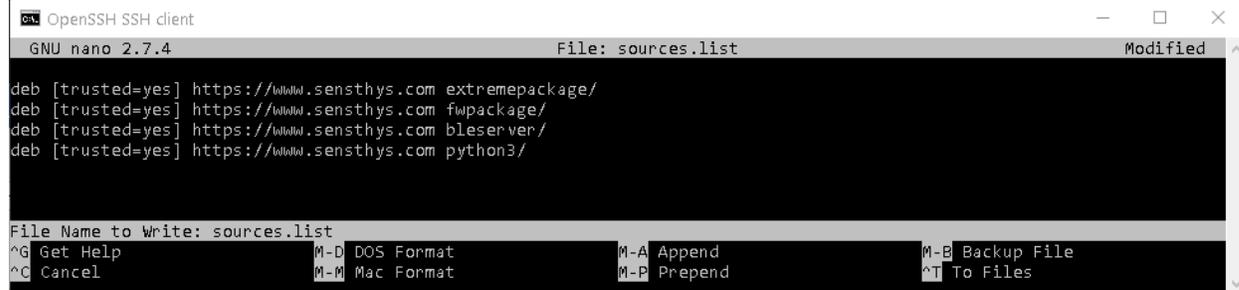


```
OpenSSH SSH client                                                                    —  □  ×

  GNU nano 2.7.4                         File: sources.list                        Modified

deb [trusted=yes] https://www.sensthys.com extremepackage/
deb [trusted=yes] https://www.sensthys.com fwpackage/
deb [trusted=yes] https://www.sensthys.com bleserver/
deb [trusted=yes] https://www.sensthys.com python3/



File Name to Write: sources.list
^G Get Help          M-D DOS Format      M-A Append        M-B Backup File
^C Cancel            M-M Mac Format      M-P Prepend       ^T  To Files
```

Now let's verify that the issue has been resolved.

Please enter apt-get update, and you should now see your problem resolved.

```
root@pico-imx6:/etc/apt# apt-get update
Ign:1 https://www.sensthys.com extremepackage/ InRelease
Ign:2 https://www.sensthys.com fwpackage/ InRelease
Ign:3 https://www.sensthys.com bleserver/ InRelease
Ign:4 https://www.sensthys.com python3/ InRelease
Ign:5 https://www.sensthys.com extremepackage/ Release
Ign:6 https://www.sensthys.com fwpackage/ Release
Ign:7 https://www.sensthys.com bleserver/ Release
Ign:8 https://www.sensthys.com python3/ Release
Ign:9 https://www.sensthys.com extremepackage/ Packages.diff/Index
Ign:10 https://www.sensthys.com extremepackage/ Translation-en
Ign:11 https://www.sensthys.com fwpackage/ Packages.diff/Index
Ign:12 https://www.sensthys.com fwpackage/ Translation-en
Ign:13 https://www.sensthys.com bleserver/ Packages.diff/Index
Ign:14 https://www.sensthys.com bleserver/ Translation-en
Ign:15 https://www.sensthys.com python3/ Packages.diff/Index
Ign:16 https://www.sensthys.com python3/ Translation-en
Ign:17 https://www.sensthys.com extremepackage/ Packages
Ign:10 https://www.sensthys.com extremepackage/ Translation-en
Ign:18 https://www.sensthys.com fwpackage/ Packages
Ign:12 https://www.sensthys.com fwpackage/ Translation-en
Ign:19 https://www.sensthys.com bleserver/ Packages
Ign:14 https://www.sensthys.com bleserver/ Translation-en
Ign:20 https://www.sensthys.com python3/ Packages
Ign:16 https://www.sensthys.com python3/ Translation-en
Ign:17 https://www.sensthys.com extremepackage/ Packages
Ign:10 https://www.sensthys.com extremepackage/ Translation-en
Ign:18 https://www.sensthys.com fwpackage/ Packages
Ign:12 https://www.sensthys.com fwpackage/ Translation-en
Ign:19 https://www.sensthys.com bleserver/ Packages
Ign:14 https://www.sensthys.com bleserver/ Translation-en
Ign:20 https://www.sensthys.com python3/ Packages
Ign:16 https://www.sensthys.com python3/ Translation-en
Hit:17 https://www.sensthys.com extremepackage/ Packages
Ign:10 https://www.sensthys.com extremepackage/ Translation-en
Hit:18 https://www.sensthys.com fwpackage/ Packages
Ign:12 https://www.sensthys.com fwpackage/ Translation-en
Hit:19 https://www.sensthys.com bleserver/ Packages
Ign:14 https://www.sensthys.com bleserver/ Translation-en
Hit:20 https://www.sensthys.com python3/ Packages
Ign:16 https://www.sensthys.com python3/ Translation-en
Reading package lists... Done
root@pico-imx6:/etc/apt#
```

## Step 3.2    *Fixing the Certificates Issue*

If you see a series of errors discussion "certificates", then your reader needs to have its clock set. The Extreme does not have an onboard clock with battery backup. When the Extreme boots up, if there is nothing in the environment that "sets" the clock of the Extreme, the clock will be far enough off that the validation of certificates involved with the Apt-Get process doesn't work.
Let's first figure out if this is the issue – starting with requesting the reader tell us the date and time. Two notes – the time is expressed in a 24h format and the time is UTC. Coordinated Universal Time (UTC) is 7 hours ahead of Pacific Time.

Request time and date

**root@pico-imx6:~# date**
**Wed May 12 16:23:49 UTC 2021**

Now set the date and time. Please note the exact format of this command. Set this to the actual date and time.

**root@pico-imx6:~# date "2021-05-12 16:23:00"**
**Wed May 12 16:23:00 UTC 2021**

Verify that the date and time are now correct.

**root@pico-imx6:~# date**
**Wed May 12 16:23:03 UTC 2021**

Next it is advised to clean up the certificate list. This is done with the following command.

**root@pico-imx6: sed -i.bak "s/^mozilla\/DST_Root_CA_X3.crt$/\!mozilla\/DST_Root_CA_X3.crt/g" /etc/ca-certificates.conf && update-ca-certificates**

A correct response to this command should show 1 certificate removed.

Please enter **apt-get update**, and you should now see your problem resolved.

```
root@pico-imx6:/etc/apt# apt-get update
Ign:1 https://www.sensthys.com extremepackage/ InRelease
Ign:2 https://www.sensthys.com fwpackage/ InRelease
Ign:3 https://www.sensthys.com bleserver/ InRelease
Ign:4 https://www.sensthys.com python3/ InRelease
Ign:5 https://www.sensthys.com extremepackage/ Release
Ign:6 https://www.sensthys.com fwpackage/ Release
Ign:7 https://www.sensthys.com bleserver/ Release
Ign:8 https://www.sensthys.com python3/ Release
Ign:9 https://www.sensthys.com extremepackage/ Packages.diff/Index
Ign:10 https://www.sensthys.com extremepackage/ Translation-en
Ign:11 https://www.sensthys.com fwpackage/ Packages.diff/Index
Ign:12 https://www.sensthys.com fwpackage/ Translation-en
Ign:13 https://www.sensthys.com bleserver/ Packages.diff/Index
Ign:14 https://www.sensthys.com bleserver/ Translation-en
Ign:15 https://www.sensthys.com python3/ Packages.diff/Index
Ign:16 https://www.sensthys.com python3/ Translation-en
Ign:17 https://www.sensthys.com extremepackage/ Packages
Ign:10 https://www.sensthys.com extremepackage/ Translation-en
Ign:18 https://www.sensthys.com fwpackage/ Packages
Ign:12 https://www.sensthys.com fwpackage/ Translation-en
Ign:19 https://www.sensthys.com bleserver/ Packages
Ign:14 https://www.sensthys.com bleserver/ Translation-en
Ign:20 https://www.sensthys.com python3/ Packages
Ign:16 https://www.sensthys.com python3/ Translation-en
Ign:17 https://www.sensthys.com extremepackage/ Packages
Ign:10 https://www.sensthys.com extremepackage/ Translation-en
Ign:18 https://www.sensthys.com fwpackage/ Packages
Ign:12 https://www.sensthys.com fwpackage/ Translation-en
Ign:19 https://www.sensthys.com bleserver/ Packages
Ign:14 https://www.sensthys.com bleserver/ Translation-en
Ign:20 https://www.sensthys.com python3/ Packages
Ign:16 https://www.sensthys.com python3/ Translation-en
Hit:17 https://www.sensthys.com extremepackage/ Packages
Ign:10 https://www.sensthys.com extremepackage/ Translation-en
Hit:18 https://www.sensthys.com fwpackage/ Packages
Ign:12 https://www.sensthys.com fwpackage/ Translation-en
Hit:19 https://www.sensthys.com bleserver/ Packages
Ign:14 https://www.sensthys.com bleserver/ Translation-en
Hit:20 https://www.sensthys.com python3/ Packages
Ign:16 https://www.sensthys.com python3/ Translation-en
Reading package lists... Done
root@pico-imx6:/etc/apt#
```

## Step 4    Update the Reader

Now enter **apt-get install extremepackage**



### Step 4.1    Fixing the dpkg error

If the install process provides responds with "dpkg was interrupted, you must manually run "**dpkg – configure -a**" because the reader has picked up a dpkg bug.

If you didn't see this message, please proceed to 4.2

If you did see this message, please enter **dpkg – configure -a**

## Step 4.2 Installing extremepackage

Please type in **apt-get install extremepackage**.
When you see "Do you want to continue", please enter Y.

```
Description: Extreme software core services, web interface updates, LLRP
root@pico-imx6:/etc/apt# dpkg --configure -a
root@pico-imx6:/etc/apt# apt-get install extremepackage
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  bleserver
The following packages will be upgraded:
  bleserver extremepackage
2 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
1 not fully installed or removed.
Need to get 4222 kB/5494 kB of archives.
After this operation, 2048 kB of additional disk space will be used.
Do you want to continue? [Y/n]
```

Following the upgrade process, the reader will go down to reboot.

```
After this operation, 2048 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 https://www.sensthys.com extremepackage/ extremepackage 1.1.40 [4222 kB]
Fetched 4222 kB in 3s (1266 kB/s)
(Reading database ... 230 files and directories currently installed.)
Preparing to unpack .../bleserver_1.0.1_all.deb ...
Unpacking bleserver (1.0.1) over (1.0.1) ...
Preparing to unpack .../extremepackage_1.1.40_all.deb ...
Unpacking extremepackage (1.1.40) over (1.1.37) ...
Setting up bleserver (1.0.1) ...
Setting up extremepackage (1.1.40) ...

Broadcast message from root@pico-imx6 (pts/1) (Wed Feb 10 21:56:29 2021):

The system is going down for reboot NOW!
root@pico-imx6:/etc/apt#
```

# Chapter 5    Updating Bluetooth Low Energy (BLE)

To update the BLE servers, please execute the command:

**apt-get install bleserver**

# Chapter 6    Verify the Update

Please close the RFID Console.

Relaunch the console and wait for the Extreme to appear. Click on the reader. It may be that the reader isn't fully UP and in the messages it asked you to click on the reader again. Once the reader is up and running, the lower message should say "No errors logged".

If you select the Sensor tab, the build # will reflect that the software package has been updated.

Specifications Subject to Change
V1.5 DCN-ST-0009-D

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