

Extreme Update Procedure

SENSX EXTREME



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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.

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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.

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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 émise 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

Table of Contents

LEGAL NOTICES	2
REVISION HISTORY	3
TABLE OF CONTENTS.....	4
CHAPTER 1 INTRODUCTION	5
CHAPTER 2 INSTALL	5
Step 1 Find the reader IP address	5
Step 2 Getting into your Extreme	5
Step 3 Update Preparation	8
Step 4 Update the Reader	16
CHAPTER 5 VERIFY THE UPDATE	18

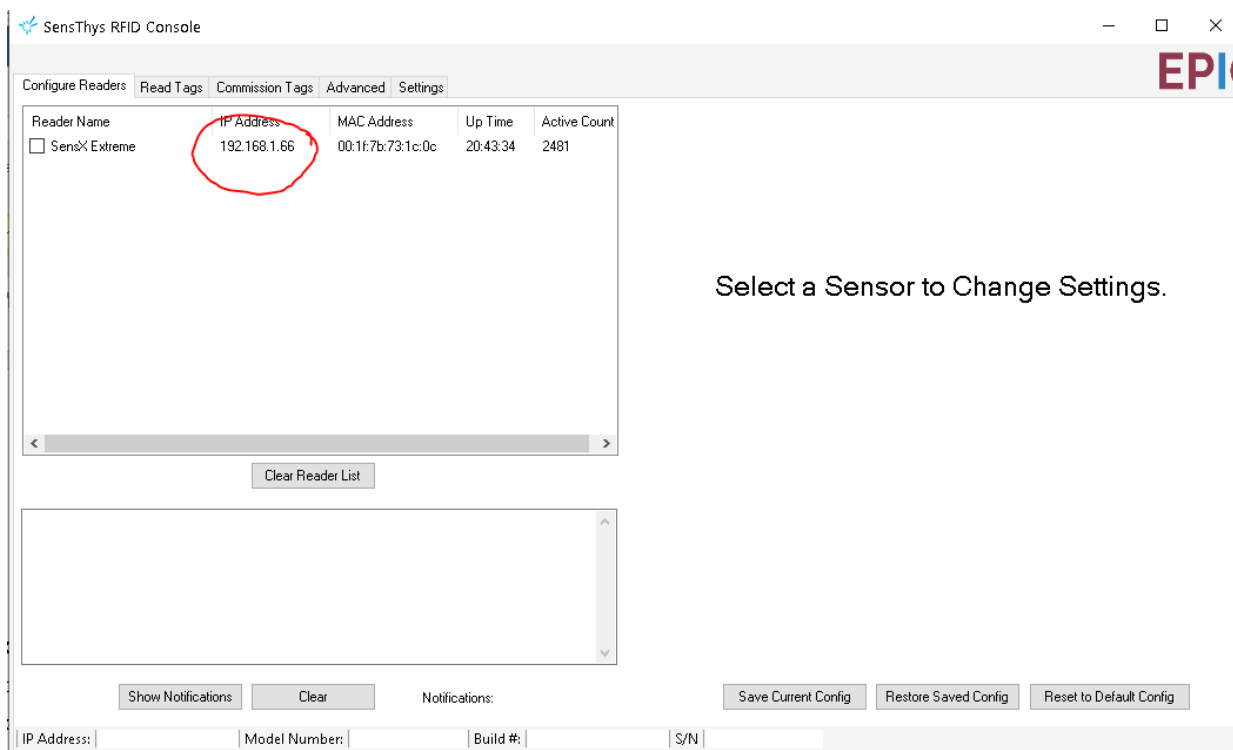
CHAPTER 1 Introduction

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 have 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.

SensThys RFID Console

Configure Readers Read Tags Advanced Settings

EPIC

Set Reader Date Time succeeded
Reader Date/Time = 2021-08-12T12:18:46

Features Performance AutoSens

Current Reader Date & Time
Current Setting: 2021-08-12 12:18:46
Set Reader Date/Time

Reader Configuration

Number of Antennas:
 Number of Ethernet Ports:
 Number of GPIs:
 Number of GPOs:
 Has DC Input:
 Get Reader Config

EPIC Mode Setting

EPIC Mode:
 Set EPIC Mode

Inventory Filter

Mask Bank:
 Mask Start Bit Address: Mask Length (# of bits):
 Mask (4 Hex digits per box):
☐ Make Persistent
 Apply Filter

Clear Message List

Many of the features present on the Advanced tab are made available for fine-tuning in special environments and for leading-edge users that have a need for capabilities that are in development. Please be advised that some settings may put the reader in a state where it won't read tags. If this should happen, go to the Configure Readers tab, click the button "Reset to Default Config", then power cycle your reader.

IP Address: 192.168.1.149 Model Number: SX11480 Build #: C.21.05.05.01 S/N: 4194000001

Step 2 Getting into your Extreme

Open the Command Prompt

Command Prompt

```
Microsoft Windows [Version 10.0.19041.685]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\Users\Jo Major>
```

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

```
Command Prompt

Microsoft Windows [Version 10.0.19041.685]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\Users\Jo Major>ssh root@192.168.1.66
```

When you see “Are you sure....” type in yes.

```
Command Prompt - ssh root@192.168.1.68

Microsoft Windows [Version 10.0.19041.685]
(c) 2020 Microsoft Corporation. All rights reserved.

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
```

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.

```
OpenSSH SSH client

Microsoft Windows [Version 10.0.19041.685]
(c) 2020 Microsoft Corporation. All rights reserved.

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:~#
```

Step 3 Update Preparation

Next type in apt-get update and enter.

```
OpenSSH SSH client
Microsoft Windows [Version 10.0.19041.685]
(c) 2020 Microsoft Corporation. All rights reserved.

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
```

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.


```

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:18 https://www.sensthys.com extremepackage/ Translation-en
Ign:19 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:18 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
Get:17 https://www.sensthys.com extremepackage/ Packages [366 B]
Ign:18 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”*

```
Fetch 366 B in 1min 24s (4 B/s)
Reading package lists... Done
W: Target Packages (Packages) is configured multiple times in /etc/apt/sources.list:2 and /etc/apt/sources.list:5
W: Target Translations (en) is configured multiple times in /etc/apt/sources.list:2 and /etc/apt/sources.list:5
W: Target Packages (Packages) is configured multiple times in /etc/apt/sources.list:2 and /etc/apt/sources.list:5
W: Target Translations (en) is configured multiple times in /etc/apt/sources.list:2 and /etc/apt/sources.list:5
root@pico-imx6:~#
```

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.

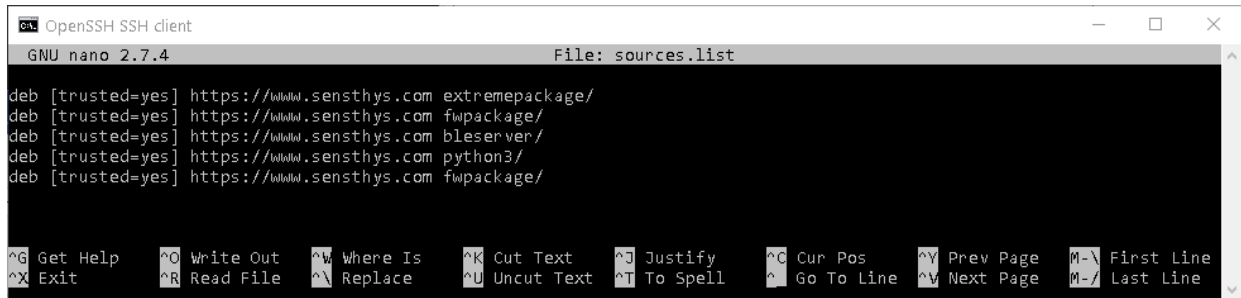
```
W: Target Packages (Packages) is configured multiple times in /etc/apt/sources.list:2 and /etc/apt/sources.list:5
W: Target Translations (en) is configured multiple times in /etc/apt/sources.list:2 and /etc/apt/sources.list:5
W: Target Packages (Packages) is configured multiple times in /etc/apt/sources.list:2 and /etc/apt/sources.list:5
W: Target Translations (en) is configured multiple times in /etc/apt/sources.list:2 and /etc/apt/sources.list:5
root@pico-imx6:~# cd /etc/apt
root@pico-imx6:/etc/apt#
```

Next type in nano sources.list

```

root@pico-imx6:~# cd /etc/apt
root@pico-imx6:/etc/apt# nano sources.list
  
```

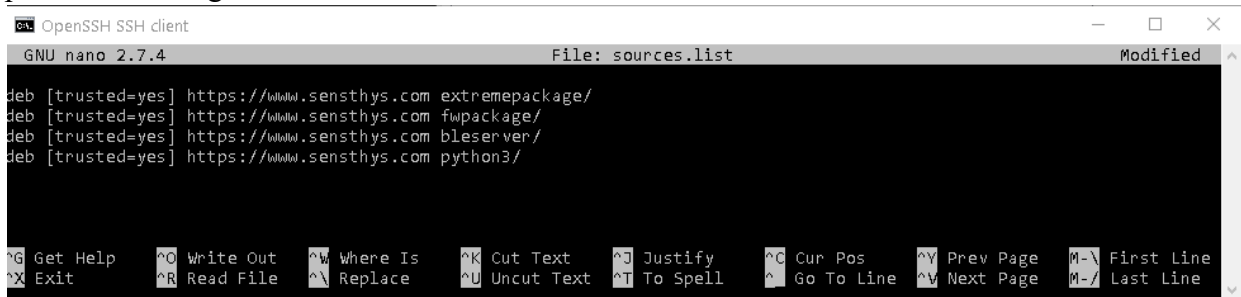
This will show you a list. Examining the following list, you'll see that the second and fifth lines are identical.



```

GNU nano 2.7.4 File: sources.list
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/
deb [trusted=yes] https://www.sensthys.com fwpackage/
  
```

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.

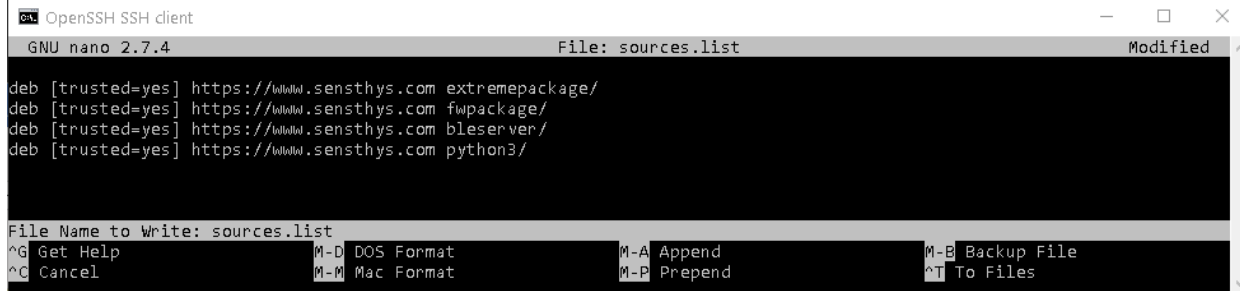


```

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/
  
```

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
```

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

```
Ign:12 https://deb.debian.org/debian/ Translation-en
Hit:19 https://deb.debian.org/debian/ Packages
Ign:14 https://deb.debian.org/debian/ Translation-en
Hit:20 https://deb.debian.org/debian/ Packages
Ign:16 https://deb.debian.org/debian/ Translation-en
Reading package lists... Done
root@pico-imx6:/etc/apt# 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”” 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

```
Section: custom
Installed-Size: 32000
Maintainer: deb.debian.org
Architecture: all
Version: 1.1.37
Description: Extreme software core services, web interface updates, LLRP support, AutoSens, & BLE hooks
root@pico-imx6:/etc/apt# dpkg --configure -a
root@pico-imx6:/etc/apt#
```


2r

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) ...

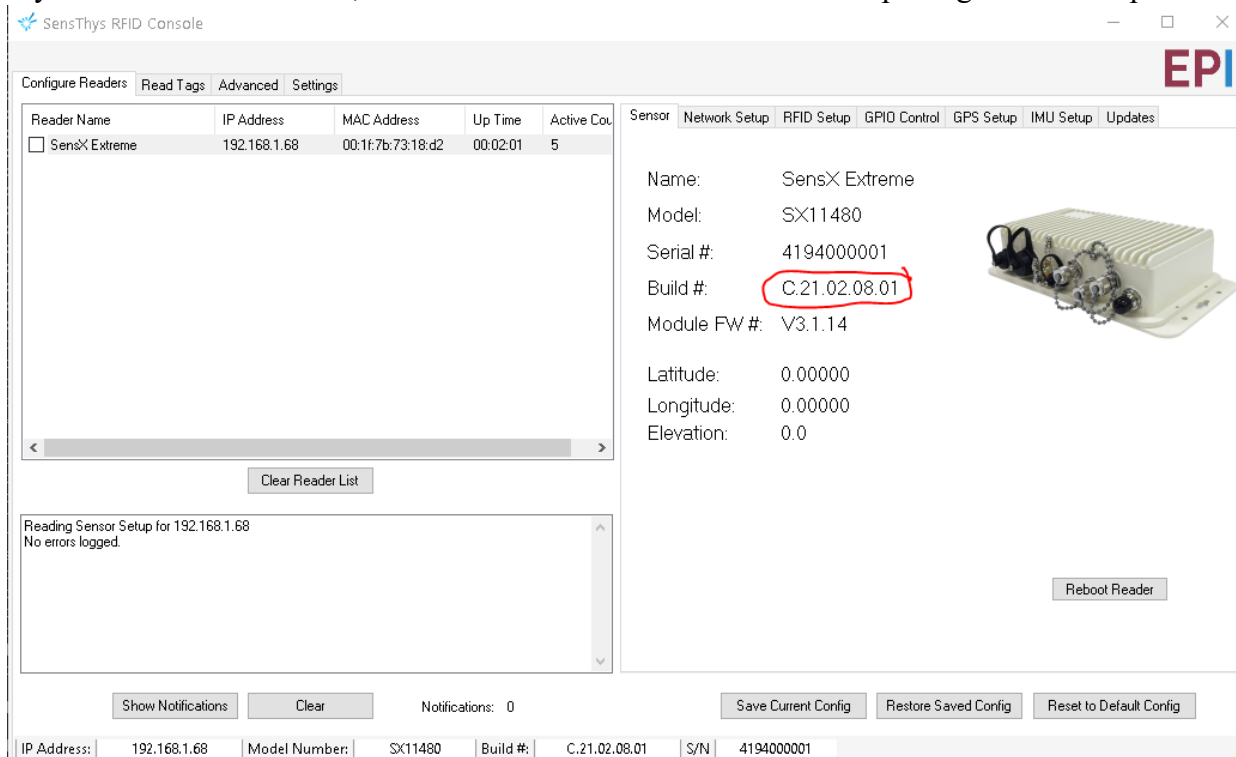
Broadcast message from root@pico-imx6 (pts/1) (Wed Feb 10 21:56:29 2021):
The system is going down for reboot NOW!
root@pico-imx6:/etc/apt#
```

Chapter 5 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.



The screenshot shows the SensThys RFID Console interface. The 'Configure Readers' tab is active, displaying a table of readers. The 'SensX Extreme' reader is selected. The 'Sensor' tab is selected on the right, showing the following details:

- Name: SensX Extreme
- Model: SX11480
- Serial #: 4194000001
- Build #: **C.21.02.08.01** (highlighted with a red circle)
- Module FW #: V3.1.14
- Latitude: 0.00000
- Longitude: 0.00000
- Elevation: 0.0

The 'Reboot Reader' button is visible. The bottom status bar shows the following information:

IP Address:	Model Number:	Build #:	S/N
192.168.1.68	SX11480	C.21.02.08.01	4194000001