

TECHNICAL NOTE

N-595 Patient Monitor V3.3 Software Upgrade Instructions



Note: Loading the software upgrade program into your N-595 will cause your institutional default settings and the time and date to be erased from the N-595. These settings will have to be reset after the download procedure.

Introduction

This technical note contains installation instructions for the N-595 monitor software revision 3.3. The N-595 monitor to be upgraded must contain software version 2.4.5.0 or higher. If the N-595 monitor to be upgraded does not contain the correct software version or you have questions, contact Nellcor Technical Services Department at 1.800.635.5267 and press 3.

Users of this technical note include:

- Customer Biomedical Technicians
- Nellcor Internal Engineering
- Nellcor Technical Support
- Nellcor Field Services
- Nellcor Reliability
- Nellcor Factory Services

Required Equipment

1. PC computer with:

- Windows 98, Windows NT, or Windows 2000, Windows ME, or Windows XP
 - COM1 Port
 - CD drive
 - 10 MB free disk space
2. N-595 monitor serial cable, Nellcor part number 049727.
 3. N-595 Software Version 3.3 CD.

Error Code “EEE 527”



WARNING: If your N-595 is displaying error code “EEE 527”, the following procedure must be completed prior to attempting the installation of software version 3.3.



1. Turn the N-595 off by pressing the ON/STANDBY button.
2. Disconnect the monitor from the AC power source.
3. Disconnect the sensor and pulse oximeter cable from the N-595, if applicable.

4. Set the N-595 upside down, as shown in Figure 1.

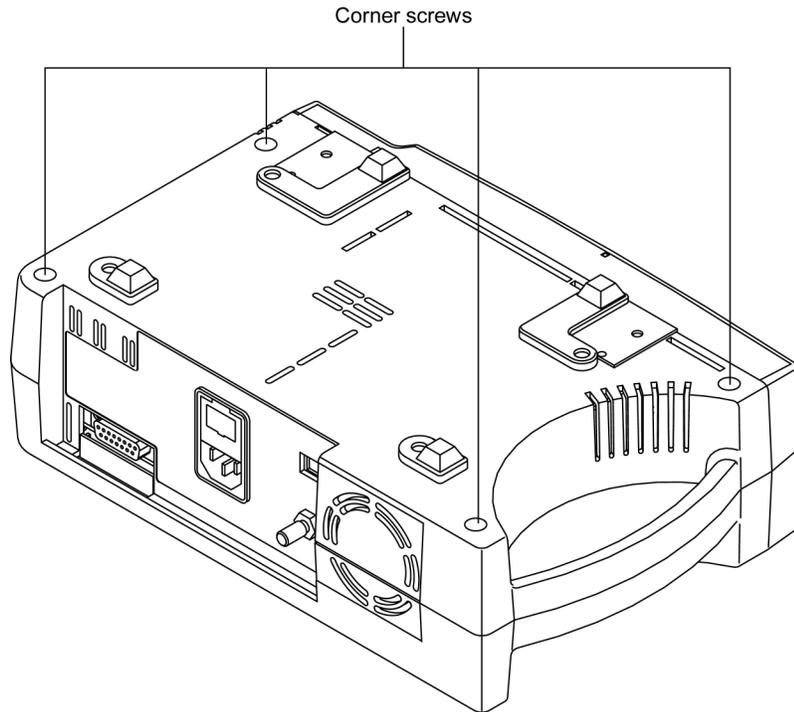


Figure 1: Corner Screws

5. Remove the monitor's four corner screws.



Caution: Observe ESD (electrostatic discharge) precautions when disassembling and reassembling the N-595 and when handling any of the components of the N-595.

6. Separate the monitor's top case from the bottom case of the monitor, being careful not to stress the wire harnesses between the cases. Place the two halves of the monitor on the table as shown in Figure 2.

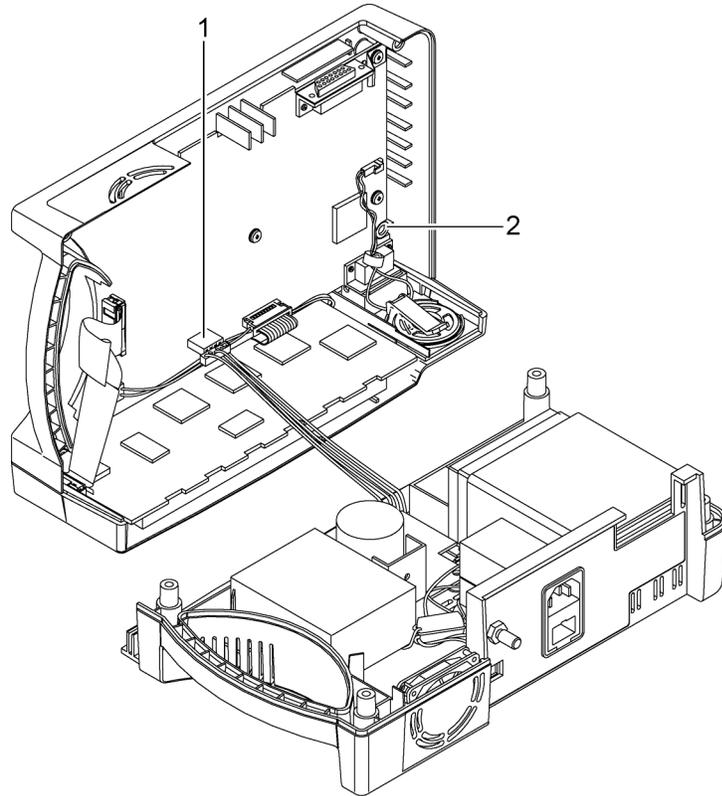


Figure 2: Separating Case Halves

7. Disconnect the main PCB to power supply cable from the main PCB. See Figure 2 item 1.
8. Wait one minute.
9. Connect the main PCB to power supply cable to the main PCB.



Caution: Pinched speaker wires. Ensure that the speaker wires are routed away from the case mounting screw hole. See Figure 2 item 2. In some instances the speaker wires have been pinched between the two cases, causing them to break. Check all wiring, ensuring that the wiring does not get pinched.

10. Place the monitor's top case over the bottom case, being careful to align the Display PCB, Power Entry Module, and the fan with the slots in the case halves.



Caution: When reassembling the N-595, tighten the screws that hold the cases together to a maximum of 10 inch-pounds. Over-tightening could strip out the screw holes in the top case, rendering it unusable.

11. Install the four corner screws.

12. Connect the N-595 to AC power. Verify that the AC Power indicator is lit.



13. Press the ON/STANDBY button to turn on the N-595. The N-595 will display error code “EEE 533” on initial power on.



14. Press the ON/STANDBY button two times to turn the N-595 off and then on. The N-595 will display error code “EEE 560” on power on.



15. Press the ON/STANDBY button two times to turn the N-595 off and then on. The N-595 will display a white screen for approximately 25 seconds.

16. Wait 2 minutes before going to step 17.



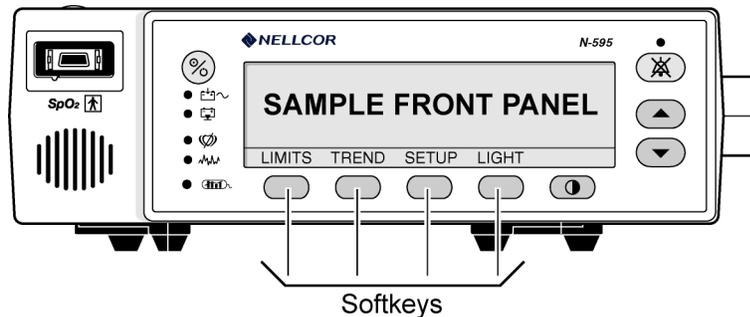
17. Press the ON/STANDBY button two times to turn the N-595 off and then on.

18. The N-595 display should be as follows:



Note: The x.x.x.x indicates the revision number of the software installed in your monitor.

Upgrade Procedure



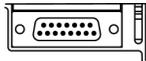
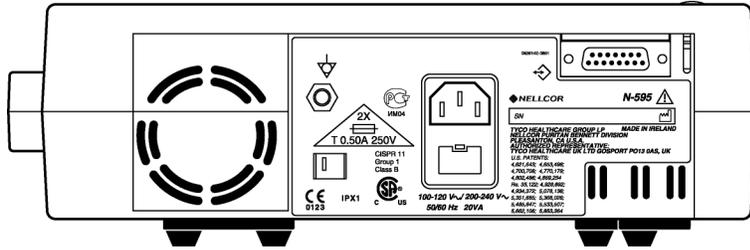
-  1. Connect the N-595 monitor to AC power. Confirm that the AC POWER indicator is lit.
- 2. Disconnect the sensor and sensor cable from the N-595 monitor.
-  3. Turn on the N-595 by pressing the ON/STANDBY button.



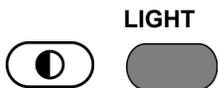
- 4. Verify that the N-595 monitor software version is 2.4.5.0 or higher. If the software version is not 2.4.5.0 or higher, do not continue with the software download. Contact Nellcor Technical Services Department at 1.800.635.5267 and press 3, or your local Nellcor representative.



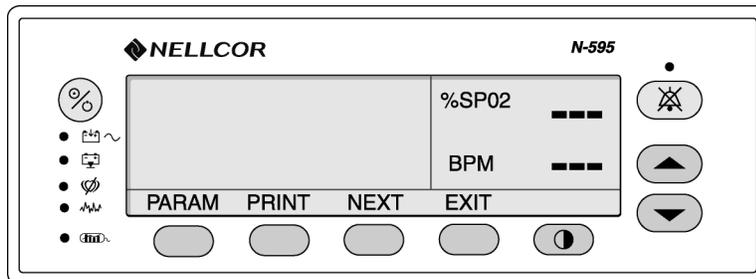
Note: The software version is displayed on the N-595 startup display screen.



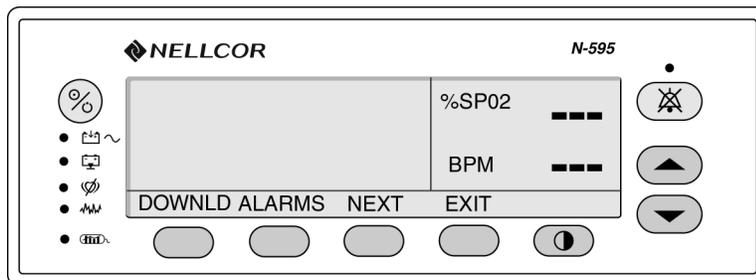
5. Connect one end of the N-595 serial cable, part number 049727, to the N-595 monitor Serial Port connector.
6. Connect the other end of the N-595 serial cable to a free "COM" port on the computer.



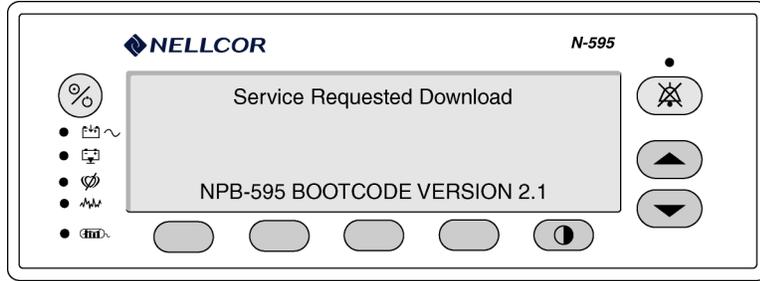
7. On the N-595, press and hold the CONTRAST button. While continuing to hold the CONTRAST button, press and hold the LIGHT softkey until the following softkeys are displayed. This should take approximately 3 seconds.



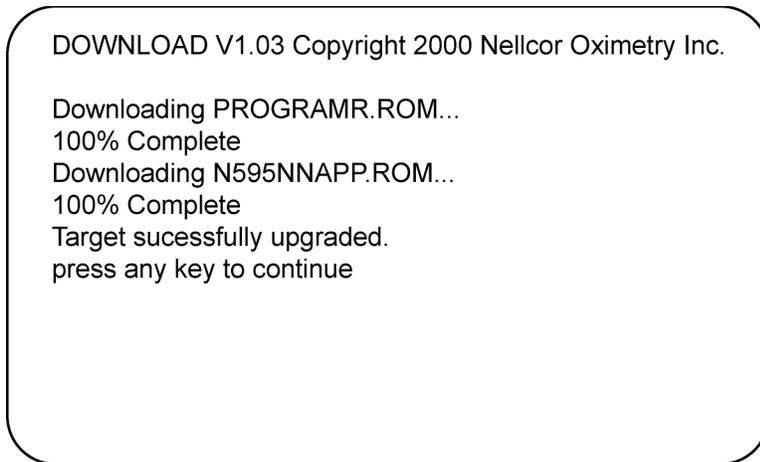
8. Press the NEXT softkey. Observe that the following softkeys are displayed.



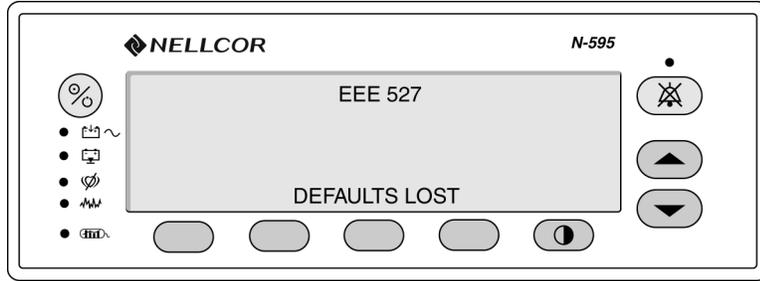
9. Press the DOWNLD softkey. Observe that the following message is displayed.



10. Insert the CD labeled “N-595 Software Version 3.3” into the computer’s CD drive.
11. The computer will display a splash screen allowing the user to select to view these installation instructions or activate the upgrade program.
12. The computer will display text indicating what percent of the software has been installed. Once the upgrade process has been successfully completed, the computer will display “Target successfully upgraded.” If a problem occurred with the download or installation, the computer will display “Target not upgraded”, (see “Error Conditions” on page 10).
13. The following illustrates the computer display if the download and installation has been successful.



14. The N-595 will reset and display EEE 527 Defaults Lost and emit an alarm.



15. Press the ON/STANDBY button two times to turn the N-595 off and then on. The N-595 will display a white screen for approximately 25 seconds.

16. Wait 2 minutes before going to step 17.



17. Press the ON/STANDBY button two times to turn the N-595 off and then on.

18. The N-595 display should be as follows:



19. If applicable, the institutional defaults will need to be re-entered. Refer to “Entering Institutional Default Settings” on page 11.

20. The date and time will have to be set. Refer to “Setting Time and Date” on page 13.

21. Fill out the N-595 Patient Monitor Software Upgrade Documentation Form (The last page of this technical note) and fax the form(s) to the Nellcor facility that normally provides service for your institution.

Error Conditions

Error conditions may be encountered while following the upgrade procedure. The table below lists error messages and possible causes. This information would be displayed on the computer.

Error message	Cause/Description
ERROR! Unable to open COM	The upgrade software can not execute due to an interfacing problem with the COM serial port on the computer.
ERROR! Unable to set baud rate	
ERROR! Unable to locate instrument	The N-595 is not powered on. The N-595 is not connected to an appropriate power outlet or is not receiving power from the outlet. The N-595 to computer interface cable is not connected correctly. The N-595 is not in the download mode. The instrument that is connected to the computer is not an N-595.
ERROR! Target not responding	Communications are interrupted before the download is complete (for example, the serial or power cable is disconnected).
ERROR! Unable to validate file	The file was downloaded, but was not correctly written to the N-595 monitor's non-volatile memory. Cycle the power to the N-595 and execute the Upgrade Procedure from step 1.

Error message	Cause/Description
ERROR! Target error	<p>The Upgrade Procedure will operate OK even if you receive the N-595 error EEE 000 with an audible alarm after turning the N-595 on.</p> <p>If this error happens more than twice in a row it is an indication of hardware failure and the monitor must be returned to Nellcor for service.</p>

Entering Institutional Default Settings

Institutional defaults must be re-entered into the N-595 after the software download. The following default values may be set:

- %SpO2 High Alarm Limit (low limit to 100%)
- %SpO2 Low Limit (80% to high limit)
- Alarm Silence Duration (30, 60, 90, 120 seconds)
- Alarm silence reminder (Enabled, Disabled)
- Alarm Volume (1 to 10)
- Alarms Allow Off (Yes, No)
- Alarms Off Reminder (Yes, No)
- Allow silence duration to be set to OFF (Yes, No)
- Data Port Baud Rate (2400, 9600, 19200)
- Data Port Protocol (ASCII, OXINET, CLINICAL, GRAPH, AGILEN, [Agilent HP monitor], SPACELB [SpaceLabs monitor], MARQ [GE Marquette monitor], DATEX [Datex-Ohmeda monitor]). Available selections depend on the software installed in your N-595.
- Default Trend Display (Dual, %SpO2, Pulse, Histogram, Amplitude)
- Display Contrast (low to high)
- Display Format (Pleth, Blip)

- Graphical/Tabular Monitor Trend Display Scale (20 sec., 40 sec., 15 min., 30 min., 1 hr., 2 hr., 4 hr., 8 hr., 12 hr., 24 hr., 36 hr., 48 hr.)
- Language (English, Danish, Dutch, Finnish, French, German, Italian, Norwegian, Portuguese, Spanish, Swedish)
- Limits (Adult, Neonate)
- Monitoring mode (Adult, Neonate)
- Nurse Call Priority (normally high, normally low)
- Pulse Beep Volume (0 to 10)
- Pulse Rate Lower Alarm Limit (30 bpm to high limit)
- Pulse Rate Upper Alarm Limit (low limit to 250 bpm)
- Response Mode (Normal, Fast)
- *SatSeconds* (OFF, 10, 25, 50, 100)
- Sensor Event Record Format (%SpO₂, %SpO₂ and Pulse Rate)
- Sensor Message Enabled (Yes, No)

1. Disconnect the sensor from the monitor.



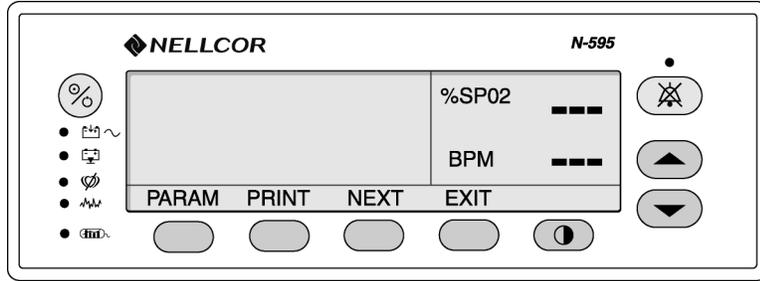
Note: If the sensor is not disconnected, the only softkeys on the screen will be PARAM and EXIT.

2. Set desired values to the institutional values as indicated in the N-595 Operator's manual.

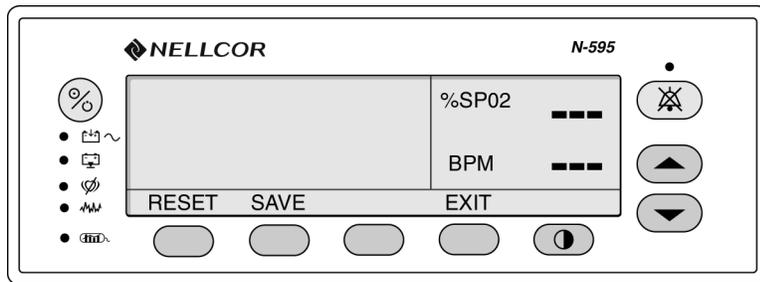


LIGHT

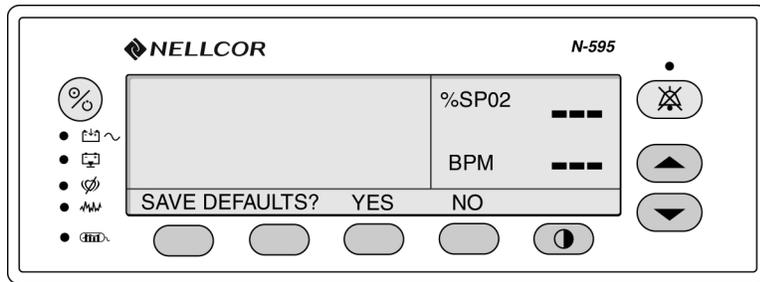
3. Simultaneously press the LIGHT softkey and the CONTRAST button for more than 3 seconds. The menu bar will change to the softkey headings shown below.



PARAM 4. Press the PARAM softkey.



SAVE 5. Press the SAVE softkey.



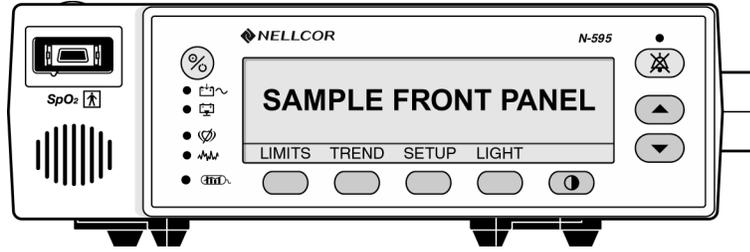
YES 6. Press the YES softkey.



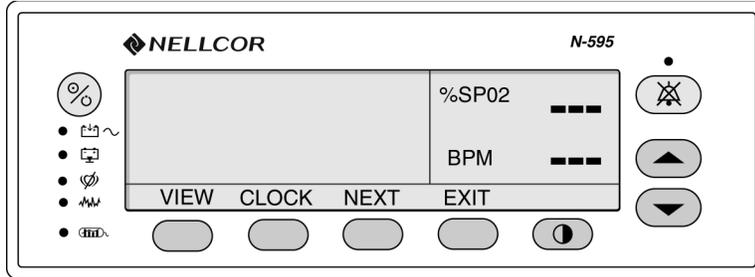
7. The monitor will sound 3 beeps indicating that institutional defaults have been set.

Setting Time and Date

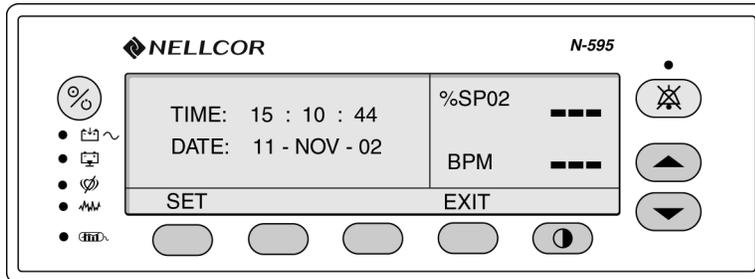
The time and date must be re-entered into the N-595 after the software download.



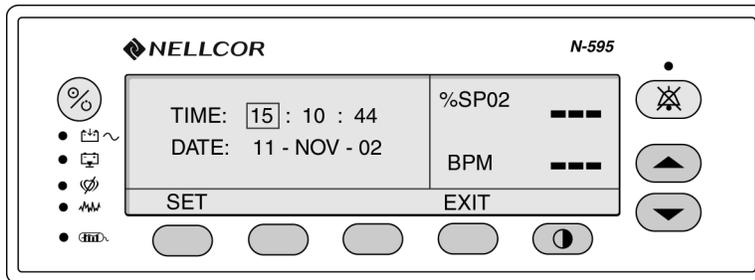
SETUP 1. Press the SETUP softkey.



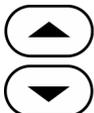
CLOCK 2. Press the CLOCK softkey.



SET 3. Press the SET softkey.



4. Use the ADJUST UP and ADJUST DOWN buttons to set the correct hour.



5. Repeat steps 3 and 4 for minutes, seconds, day, month, and year.

EXIT



6. Press the EXIT softkey twice.

Questions

If you have questions, contact Nellcor Technical Services Department at 1.800.635.5267 and press 3, or your local Nellcor representative.

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N-595 Patient Monitor Software Upgrade Documentation Form

Notes:

- Service personnel must use this form and respond via fax.
- Additional copies of this form may be made to document all monitors being upgraded.
- It is important that you fax the completed form within 3 days of completing the upgrade to facilitate prompt updating of the N-595 monitor history records.

Upgrade the N-595 monitor software as described in the N-595 Patient Monitor V3.3 Software Upgrade Instructions technical note. Complete the appropriate boxes indicating which monitors were upgraded.

After completing this form, fax this form to the Nellcor facility that normally provides service for your institution. Check with your local representative for the correct number.

U.S.A. Nellcor Technical Services 925.463.4720 (Fax)

Location/Institution: _____

Street Address: _____

City/State/Postal Code: _____

Country: _____

Name/Title of person performing the upgrade(s): _____

Telephone Number: _____

Monitor Serial Number	New Software Version	Upgraded By	Date Upgraded