

TCB No. 2012-001

March 2012

Technical Bulletin

GS Junior System

Installation of 454 Sequencing System Software v2.7

Summary

This document contains the procedure to upgrade the 454 Sequencing System Software from v2.5p1 to v2.7 on the GS Junior System and a description of the changes in v2.7. All GS Junior Systems (Instrument and Attendant PC) running software v2.5p1 should be upgraded to software v2.7. All new installations should only use software v2.7. When loaded as a new installation, the v2.7 software is completely self-contained and involves the installation of seven CDs. When loaded as an upgrade, only five of the seven CDs should be used. This document details only the upgrade procedure for the GS Junior System. New installations should only be performed by a qualified Roche representative.



Note: If you encounter any issues or errors during the upgrade procedures that are not described in this document, please contact your Roche customer service representative for assistance.



Table of Contents

Summary	1
Changes in GS Junior System Software Version 2.7	3
Data Acquisition	3
Data Processing	3
Data Analysis	3
GS Reference Mapper/GS <i>De Novo</i> Assembler	3
GS Reference Mapper	4
GS <i>De Novo</i> Assembler	4
SFF Tools	4
GS Amplicon Variant Analyzer	4
Units Concerned	5
Pre-Installation Activities	5
Backing Up Your Data Prior To Upgrade	5
Find Your Root Password	5
How to Obtain the Software	5
Extracting 454 Sequencing System Software Distribution files	6
Upgrading to GS Junior Software Version 2.7	11
Upgrading to the GS Junior System Data Acquisition Package, v2.7	11
Upgrading to the GS Junior System Data Processing Package, v2.7	15
Upgrading to the GS Junior System Data Analysis Package, v2.7	18
Upgrading to the GS Junior System Documentation Package, v2.7	22
Upgrading the GS Junior Instrument Firmware	28
Upgrading to 454 Sequencing System Teleservice Package, v2.7	35
Post-Installation Activities	37
Perform Instrument Test	37

Changes in GS Junior System Software Version 2.7

Version 2.7 incorporates a large number of bug fixes and new features relative to version 2.5p1. Since much of the software is shared with the GS FLX and GS FLX+ System Software, many of these changes have already been described in existing documentation. Refer to TCB 2010-16, “*Installation Procedure for GS FLX System Software v2.5.3*”, and TCB 2011-06, “*Installation of 454 Sequencing System Software v2.6*” (available from www.my454.com) for descriptions of those changes. Additional features and other significant updates present in Version 2.7 are presented below. For complete documentation of the software, refer to the *454 Sequencing System Software Manual, V2.7*.

Data Acquisition

- Firmware update enabling camera operation in unbinned mode. This doubles the resolution of the images captured during a run, with a concomitant increase in the size of the image files. The amount of space needed to store a full run is therefore increased as well. Total run size is now approximately 11 - 13 Gb (10 Gb for images and 1 - 3 Gb for the processed files).
- Additional updates to the camera control software that will reduce the incidence of a rare situation where image loss could occur during a run.
- Addition of a user-facing Instrument Test. Refer to the *GS Junior Instrument Owner's Manual* for more information on the Instrument Test.
- Removal of the sipper change warnings from the Self-Test, replaced by instructions to replace the sippers between every run, presented on the Pre-Wash screen of the Procedure Wizard.
- Preliminary keypass metrics are no longer presented at the beginning of the run. The changes to camera operation necessitated waiting until all the images have been captured before generating any run metrics. A message to this effect is presented in the GS Junior Sequencer application GUI in place of the metrics, during data acquisition.

Data Processing

- Image Processing pipeline has been optimized to handle unbinned images.
- A Modal Read Length row was added to the table in the Reads tab of the GS Run Browser.

Data Analysis

GS Reference Mapper/GS De Novo Assembler

- Multiplexing Projects enable parallel computation of multiple samples based on MID encodings.
- Multiple sequence alignments now represented as multinucleotide columns, meaning that rather than being represented as a single base insertion (or deletion) followed by a single base deletion (or insertion), substitutions are now represented by showing both bases in the same column.
- **-nft** option to include nucleotide frequencies as an extra column in the 454AlignmentInfo.tsv file.
- **changeRun** command added to facilitate relocation of projects between computers or file systems.
- 454NewblerMetrics.txt file now reports various read and base metrics as percentages relative to input data in addition to the previous behavior of reporting them relative to trimmed data.
- 454TrimStatus.txt and 454ReadStatus.txt are now conditionally generated in the same way as 454AlignmentInfo.tsv and 454Contigs.ace. They are also subject to the **-nobig** option.
- **-ud** option now uses duplicate reads in consensus generation. Previously this option only affected whether duplicates were represented in the output files, but had no effect on consensus formation.
- **-verbose** option added (not available in the GUIs).

- Known Issue: Certain cDNA projects may take longer to compute than with previous versions of the software. The workaround is to use Version 2.6 of the GS Reference Mapper or GS *De Novo* Assembler .

GS Reference Mapper

- Added support for snp134.txt (and higher) file format.
- dbSNP reporting improved. *Known SNPs* are reported if they are within 2 bases of the detected variant. *Near SNPs* are reported if they are between 2 and 10 bases of the variant. Also, *Near SNPs* do not have to match the sequence of the detected variant, but *Known SNPs* do.
- Multiple variants can now be reported at the same position in the Reference Sequence.
- changeRef command added to facilitate relocation of projects between computers or file systems.
- 454MappingQC.xls file now reports various read and base metrics as percentages relative to input data in addition to the previous behavior of reporting them relative to trimmed data.

GS De Novo Assembler

- Behavior of *heterozygous* mode has changed. Previously, regions of heterozygosity in an assembly were collapsed into a single composite contig, obscuring the diversity of the sample. Now, the *het* mode no longer collapses contigs. Instead, it chooses one allele or the other to be represented in a scaffoldContig. When *het* mode is not active, neither allele is chosen, resulting in a gap.
- Scaffold length threshold is now configurable (default is 2000, which was previously hard-coded).
- Assemblies using the **-scaffold** option no longer output 454AllContigs.fna/qual or 454LargeContigs.fna/quals files. scaffoldContigs files are provided instead.
- Isotig creation in cDNA assemblies no longer splits on depth spikes by default . Therefore, the **-nosplit** option has been replaced by the **-isplit** option.

SFF Tools

- SFF Tools are installed as part of both the Data Processing and Data Analysis packages.
- Split Info (**-si**) option was added to sffile. This reports counts of MIDs found in SFF files without actually splitting the data out into separate files.
- fnafile now supports MID functionality, including the **-s**, **-si** and **-mcf** options.

GS Amplicon Variant Analyzer

- The “Sequence Blueprint” project entity has been added. Blueprints allows AVA to understand a wider range of experimental designs. Except for long range amplicon designs, prototype Blueprints are included to support all the other types of amplicon experiments described in the document “454 Sequencing System Guidelines for Amplicon Experimental Design”. Examples include Universal Tail designs and Ligated Adaptor designs.
- The Computation tab now has user-settable parameters that apply to both how AVA groups Individual Reads into Consensus Reads and Variant detection.
- Added the capability to automatically detect insertions and small deletions.
- Added the Signal Distribution feature, available from the Global Align and Consensus Align tabs. A histogram is plotted of individual read signal intensities at the chosen position in the Reference.

Units Concerned

All GS Junior Systems (Instrument and Attendant PC) running Software Version 2.5p1 should be upgraded to Software Version 2.7. Some parts of the software package do not need to, and should not, be re-installed when doing this upgrade. **Specifically the GS Junior System Third Party and GS Junior Operating System disks are NOT part of the upgrade process.**

Pre-Installation Activities

Backing Up Your Data Prior To Upgrade



Caution: Any change to the system, including this upgrade, comes with a risk of data loss. Prior to performing the following upgrade instructions, be sure to back up all data from the GS Junior Attendant PC to a safe location. Typical options would include either a USB-connected hard disk drive, or a remote network location.

Find Your Root Password

The root password for the GS Junior Attendant PC will be required for the upgrade procedure. Before starting the procedure, be sure to have to root password available. If you do not know the root password, contact your Roche customer support representative for instructions on how to reset it. Do not proceed until you have the root password.

How to Obtain the Software

Your Roche representative can provide you with the set of six CDs and one DVD, which constitute the GS Junior System Software v2.7 (Part number **06 623 450 001**).

This complete set of seven disks is only used when performing a full installation of the 2.7 software, but even for sites upgrading v2.5p1 software, all seven disks are useful to keep as a backup of the entire v2.7 level software set. Two of the seven disks are not part of, and should NOT be used during an upgrade procedure. The GS Junior Operating System disk, in particular, should NOT be used because that would delete all data currently stored on the GS Junior Attendant PC.

The complete set of six CDs and one DVD is:

- **GS Junior System Data Acquisition Disk, v2.7**
CD contains the Instrument Control Software
- **GS Junior System Data Processing Disk, v2.7**
CD contains the GS Run Browser, GS Run Processor, GS Reporter, GS Support Tool and SFF Tools applications
- **GS Junior System Data Analysis Disk, v2.7**
CD contains the GS *De Novo* Assembler, GS Reference Mapper, GS Amplicon Variant Analyzer and SFF Tools applications
- **GS Junior System Documentation Disk, v2.7**
CD contains the user documentation for the software package and a Flash player application

- **GS Junior System Teleservice Disk, v2.7**
CD contains the Axeda Teleservice application
- **GS Junior System Third Party Software Disk, v2.7**
CD contains the Open Office application (not part of the upgrade procedure)
- **GS Junior Operating System Disk, v2.7**
DVD contains the GS Junior Operating system (not part of the upgrade procedure)



Caution: The GS Junior Operating System Disk is NOT part of the upgrade procedure outlined in this document. Installing the GS Junior Operating System Disk would delete all data stored on a GS Junior Attendant PC. The GS Junior System Third Party Software Disk, v 2.7 is also NOT part of the upgrade procedure outlined in this document.

You may also be able to obtain the following Software distribution file from a Roche FTP site. If available, your Roche representative can provide you with the necessary download information.

GS_Junior_Software_2.7.tar

This file contains only the five packages that are needed for the upgrade. Each package is provided as its own individual distribution file, contained within the main file:

DataAcquisition_2.7_JR.tgz
DataProcessing_2.7_All.tgz
DataAnalysis_2.7_All.tgz
Documentation_2.7_JR.tgz
Axeda_2.0_All.tgz



Note: A “tarball” is a linux/unix compressed archive file (similar to a “zip” file). A group of files is first archived with tar, then compressed with gzip – files have a “.tgz” file extension.

Extracting 454 Sequencing System Software Distribution files

If connected to the internet, the GS Junior Attendant PC can be used to directly download the v2.7 GS Junior System Software distribution files. Otherwise any other computer can be used for the download and then the distribution files can be transferred to the GS Junior Attendant PC via a USB memory stick (USB Storage), or transferred over an internal network, if available.



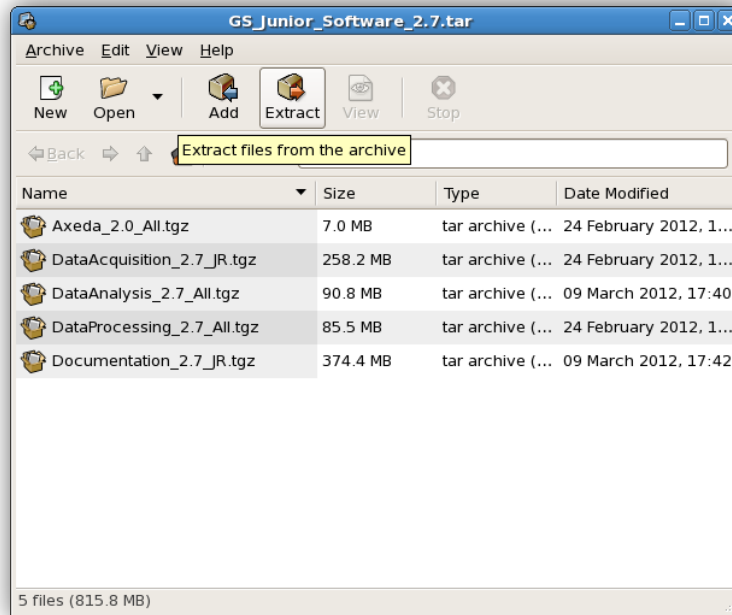
Caution: If obtaining the distribution files via FTP, be sure to transfer the files in “binary” mode, otherwise the files will be corrupted during download. In addition, DO NOT unpack, “unzip”, or “untar” prior to the step calling for this action in the instructions below. The software distribution files are created in a specific manner, which preserves the correct Linux file permissions for each file in the tarball archives. If these files are expanded and copied to a media, such as a CD-ROM or a USB device, outside of the installation environment or on another operating system, the file permissions might be changed when extracted. These possible changes could create downstream problems or errors at install on the GS Junior System.

If the software distribution files were transferred via USB, insert the USB storage device into the USB port and wait for the system to detect the USB storage device and automatically mount it.

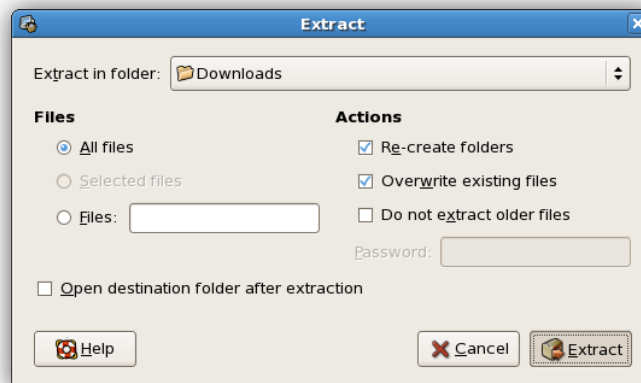
- 1) Copy the distribution file (**GS_Junior_Software_2.7.tar**) to the GS Junior Attendant PC, for example, to **/home/adminrig/Downloads**, the default location when downloading directly from the GS Junior Attendant PC.
- 2) Open the folder where the software distribution file is stored by double-clicking the folder icon on the desktop.



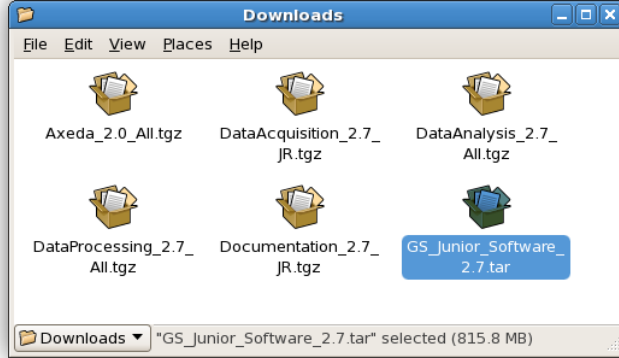
- 3) Double-click on the **GS_Junior_Software_2.7.tar** file to open the Archive Manager, as shown here:



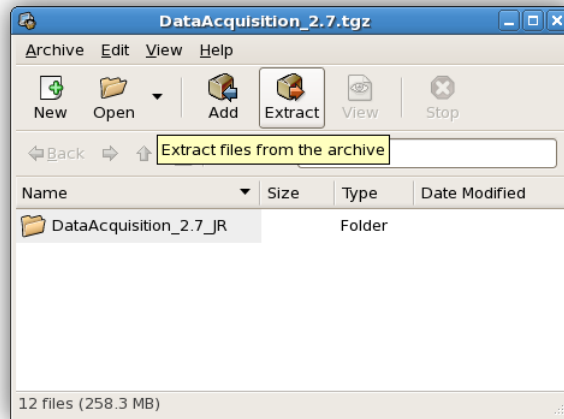
- 4) Click the “**Extract**” button to open the Extract dialog box, shown here:



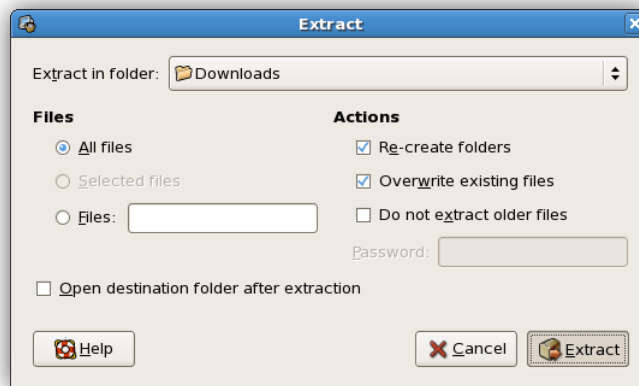
- 5) Click **“Extract”** again to extract the contents of the software distribution file, which are the five software packages to be used in the upgrade process:



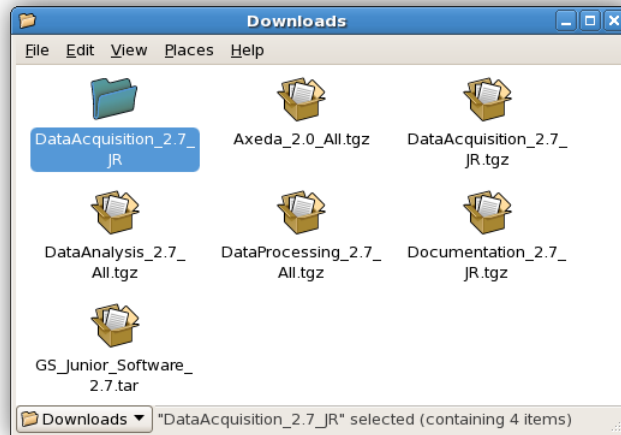
- 6) For each of five extracted tarballs, perform steps 6 through 10 to extract the contents into its own folder. Double-click on the tarball to open the Archive Manager, as shown here:



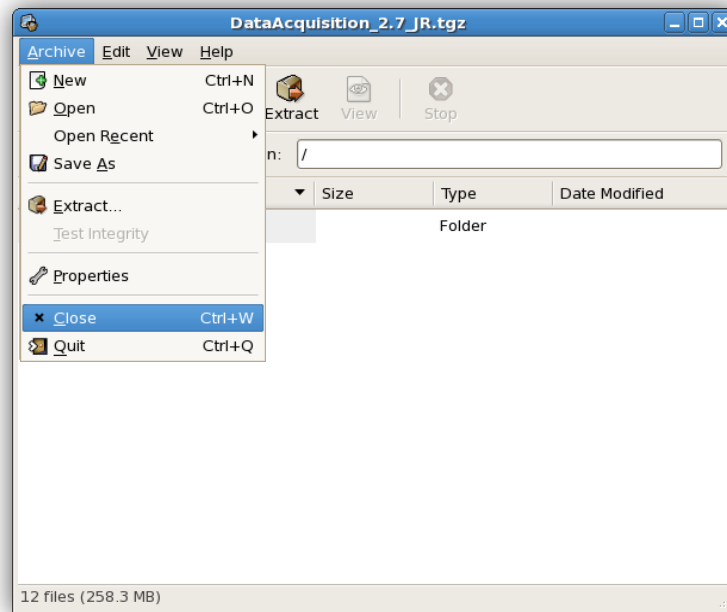
- 7) Click the **“Extract”** button to open the Extract dialog box, as shown here:



- 8) Click “**Extract**” again to extract the contents of the tarball into a new folder that will be automatically created, as shown here for the Data Acquisition tarball:



- 9) Click Archive -> Close, or click the Close box, to close the Archive Manager window.



- 10) Double-click on the newly created folder to open it and reveal the **setup.sh** icon for the package. For each package, follow the installation directions as detailed individually in the next sections.

Upgrading to GS Junior Software Version 2.7

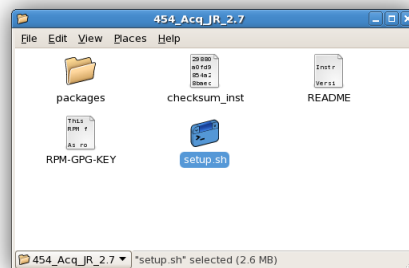


Caution: The individual software packages must be upgraded in the specific order described in this document. If you attempt to upgrade the software out of order, there is a risk that the upgrade process will fail. The order in which the software must be installed is:

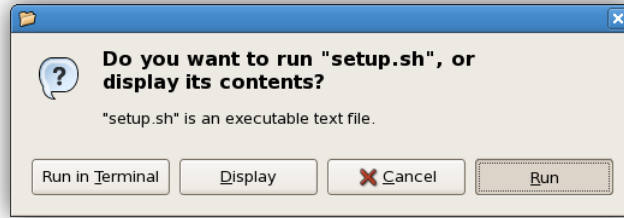
- GS Junior System Data Acquisition, v 2.7 (**DataAcquisition_2.7_JR**)
- GS Junior System Data Processing, v 2.7 (**DataProcessing_2.7_All**)
- GS Junior System Data Analysis, v 2.7 (**DataAnalysis_2.7_All**)
- GS Junior System Documentation, v 2.7 (**Documentation_2.7_JR**)
- GS Junior System Teleservice, v 2.7 (**Axeda_2.0_All**)

Upgrading to the GS Junior System Data Acquisition Package, v2.7

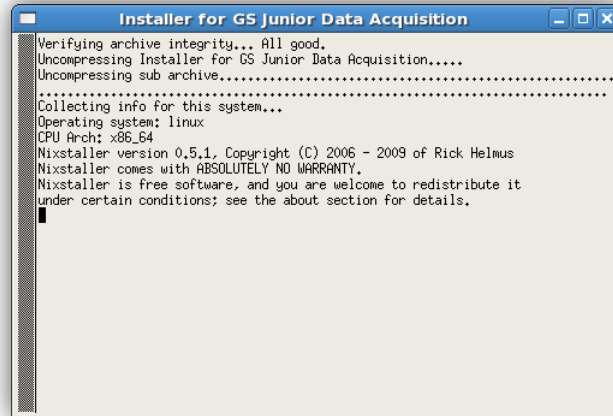
1. The root password for the GS Junior Attendant PC will be required for the upgrade procedure. Before starting the procedure, be sure to have the root password available. If you do not know the root password, contact your Roche customer support representative for instructions on how to reset it. Do not proceed until you have the root password.
2. The upgrade will abort any current sequencing or data processing operations that are in progress on the GS Junior System, so do not start the upgrade until the system is idle.
3. Exit from the GS Junior Sequencer application. Make sure to check the “Shutdown instrument on exiting” checkbox.
4. Once the instrument LED has transitioned from a rapidly blinking to a steadily blinking black/green/yellow/red, power it off using the switch on the back of the instrument.
5. If installation is performed directly from the CDs, insert the GS Junior System Data Acquisition Disk, v2.7 into the DVD drive, and wait for the system to detect the CD, automatically mount it, and open it to reveal a folder containing the **setup.sh** icon. Otherwise, the **setup.sh** icon will be present as a result of following the instructions in the earlier section “Extracting 454 Sequencing System Software Distribution files” (the window titles will be slightly different than that shown here). Start the installation procedure by double-clicking the **setup.sh** icon:



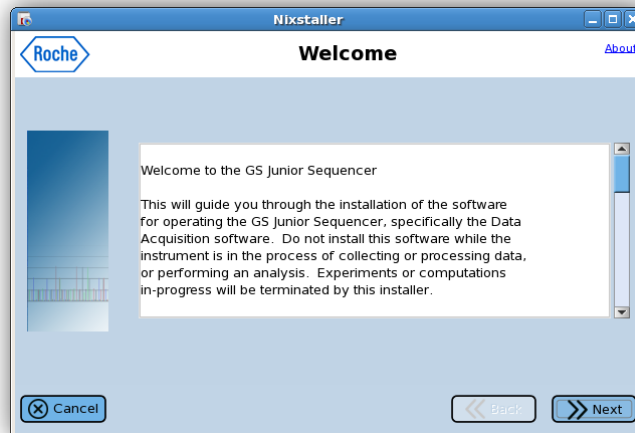
6. At the prompt, click the “**Run**” button to continue with the installation:



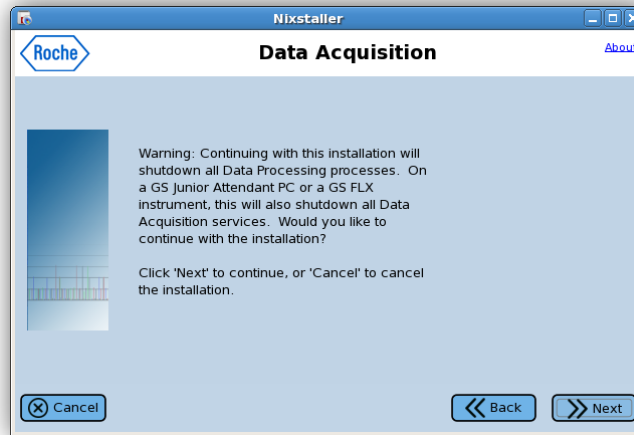
- Two windows will open. The text-based window will run in the background and requires no interaction until the end of the Data Acquisition install procedure.



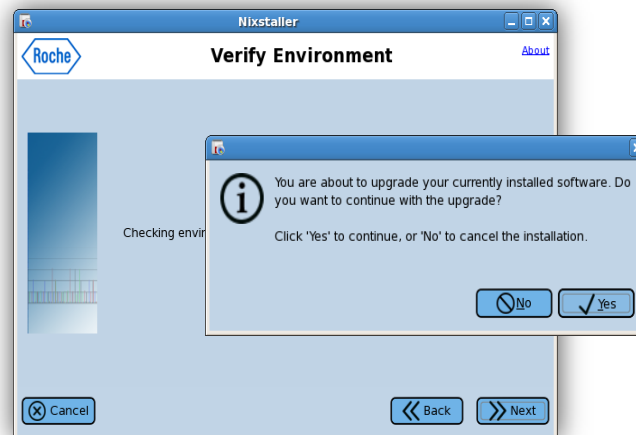
- The other window is the Setup Wizard that requires user interaction. Click the "Next" button on the initial screen:



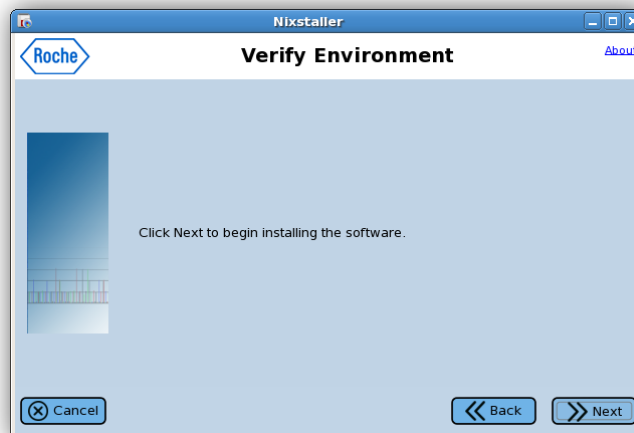
9. Click the “**Next**” button on the following screen:



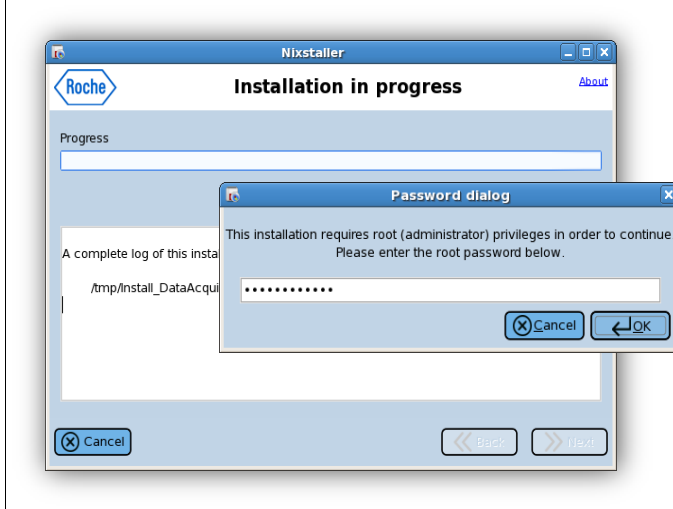
10. Click the “**Yes**” button in the dialog that pops up:



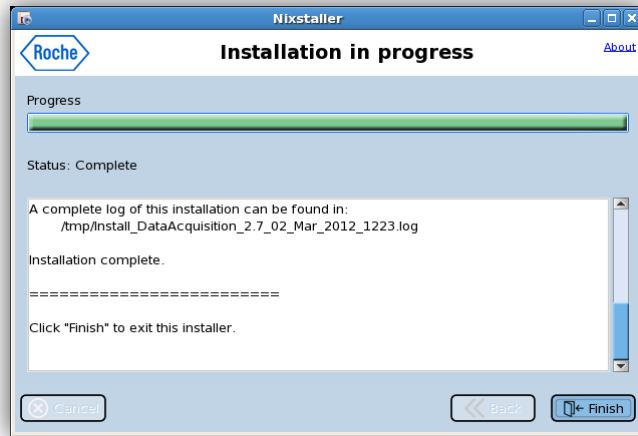
11. Click the “**Next**” button on the following screen:



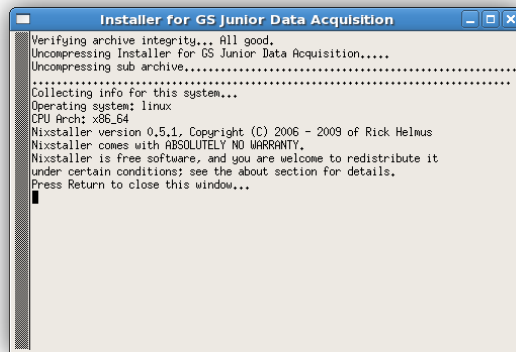
12. Type in the root password when prompted:



13. Allow the installation to proceed. Take note of the location of the installation log file for future reference. When prompted, click the “Finish” button to close the Setup Wizard:



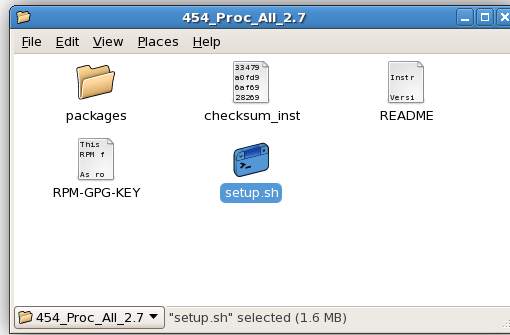
14. Return to the text-based window and hit the “Enter” key, as prompted:



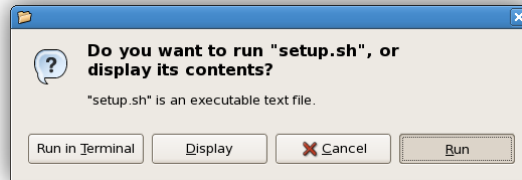
15. This concludes the procedure for upgrading to GS Junior System Data Acquisition Package, v2.7. If installing from the CD, eject the disk at this time. Proceed to the next section, “Upgrading to the GS Junior System Data Processing Package, v2.7”.

Upgrading to the GS Junior System Data Processing Package, v2.7

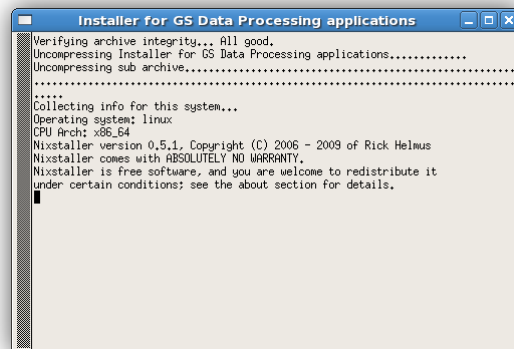
1. If installation is performed directly from the CDs, insert the GS Junior System Data Processing Disk, v2.7 into the DVD drive, and wait for the system to detect the CD, automatically mount it, and open it to reveal a folder containing the **setup.sh** icon. Otherwise, the **setup.sh** icon will be present as a result of following the instructions in the earlier section “Extracting 454 Sequencing System Software Distribution files (the window titles will be slightly different than shown here). Start the installation procedure by double-clicking the **setup.sh** icon:



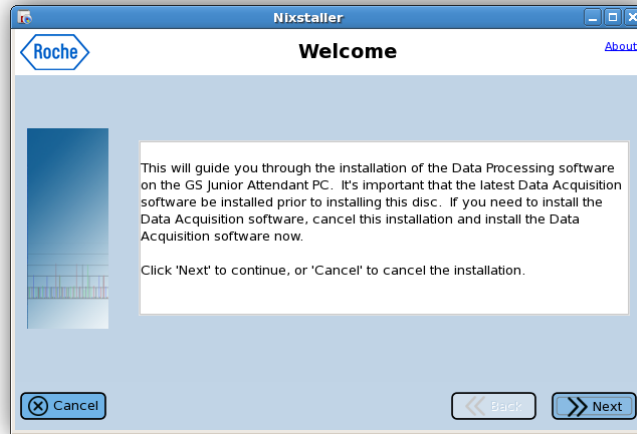
2. At the prompt, click the “**Run**” button to continue with the installation:



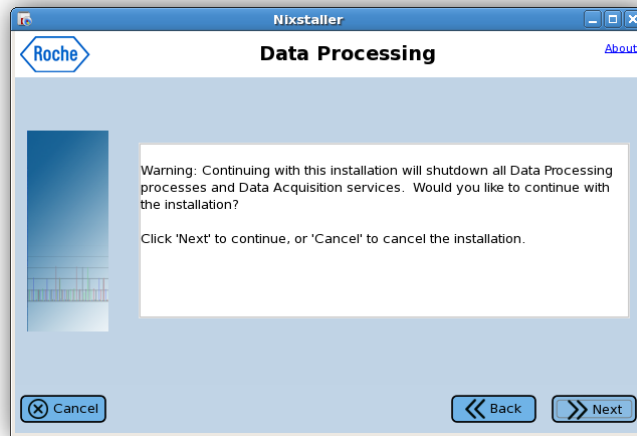
3. Two windows will open. The text-based window will run in the background and requires no interaction until the end of the Data Processing install procedure.



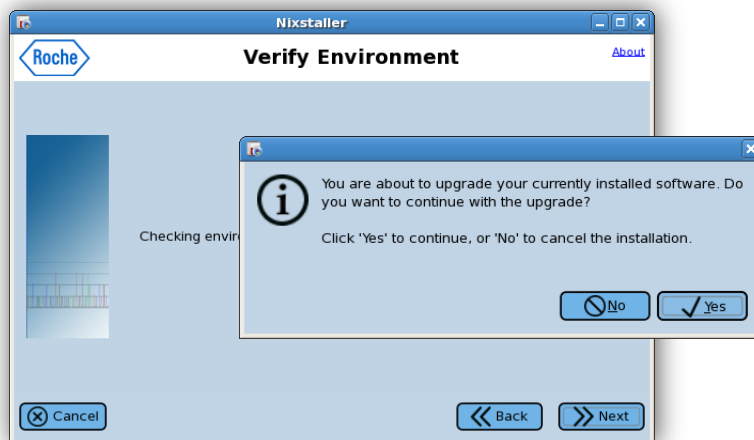
4. The other window is the Setup Wizard that requires user interaction. Click the “**Next**” button on the initial screen:



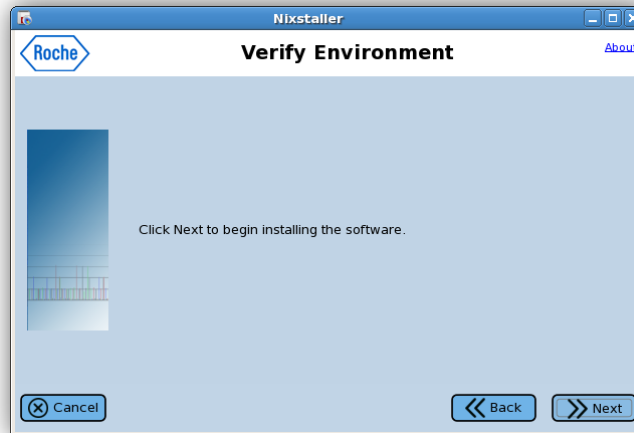
5. Click the “**Next**” button on the following screen:



6. Click the “**Yes**” button in the dialog that pops up:



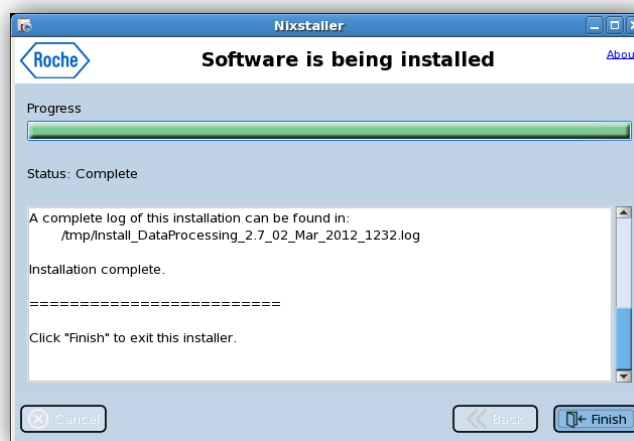
- Click the **Next** button on the following screen:



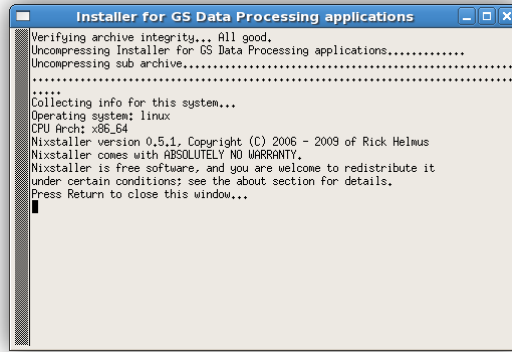
- Type in the root password when prompted:



- Allow the installation to proceed. Take note of the location of the installation log file for future reference. When prompted, click the **Finish** button to close the Setup Wizard:



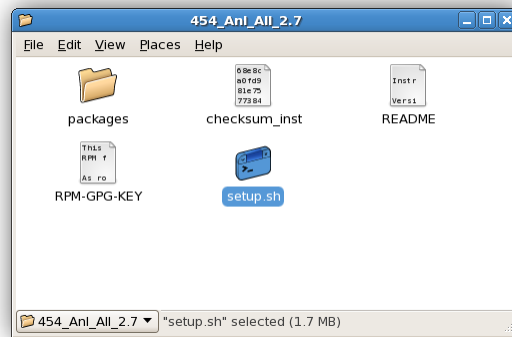
- Return to the text-based window and hit the “Enter” key, as prompted:



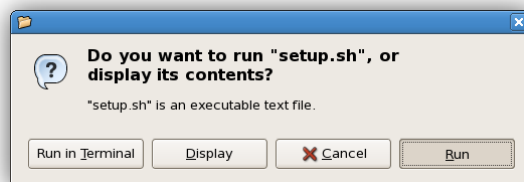
- This concludes the procedure for upgrading to 454 Sequencing System Data Processing Package, v2.7. If installing from the CD, eject the disk at this time. Proceed to the next section, “Upgrading to the GS Junior System Data Analysis Package, v2.7”.

Upgrading to the GS Junior System Data Analysis Package, v2.7

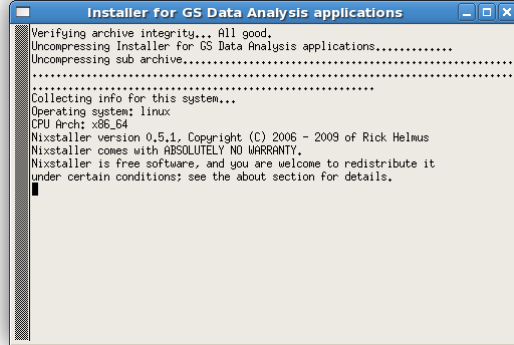
- If installation is performed directly from the CDs, insert the GS Junior System Data Analysis Disk, v2.7 into the DVD drive, and wait for the system to detect the CD, automatically mount it, and open it to reveal a folder containing the **setup.sh** icon. Otherwise, the **setup.sh** icon will be present as a result of following the instructions in the earlier section “Extracting 454 Sequencing System Software Distribution files” (the window titles will be slightly different than shown here). In either case, start the installation procedure by double-clicking the **setup.sh** icon:



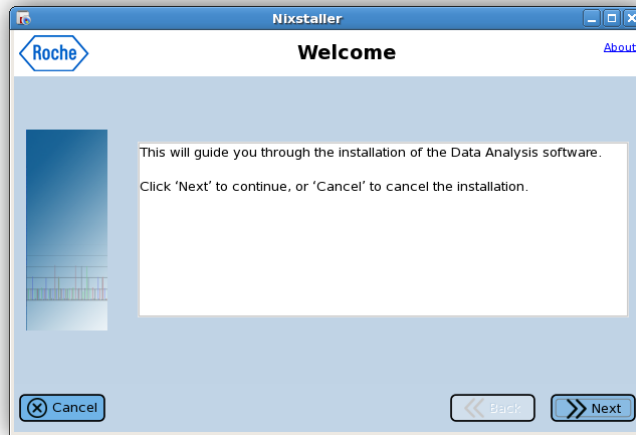
- At the prompt, click the “Run” button to continue with the installation:



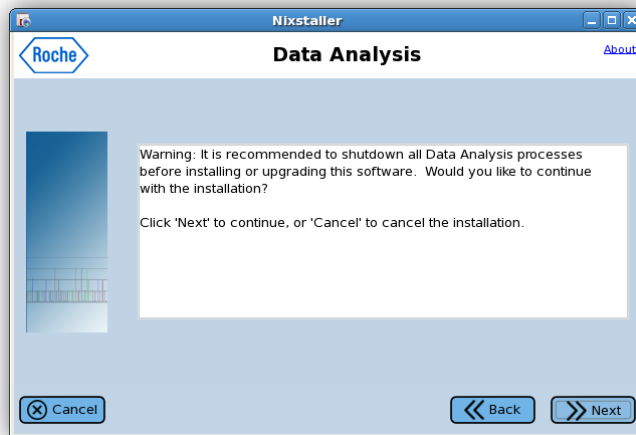
- Two windows will open. The text-based window will run in the background and requires no interaction until the end of the Data Analysis install procedure.



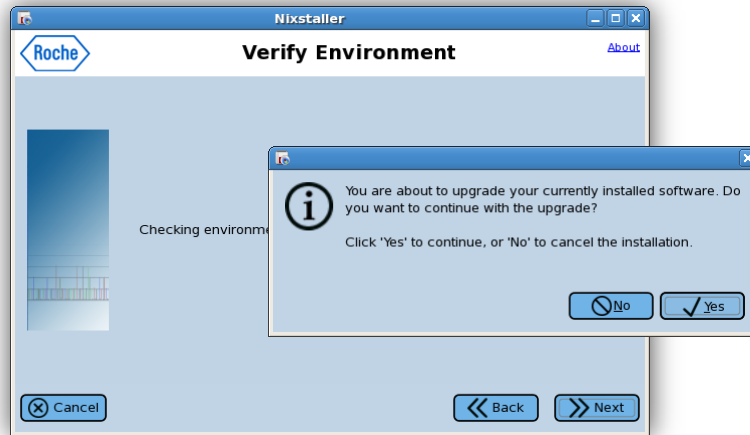
- The other window is the Setup Wizard that requires user interaction. Click the “Next” button on the initial screen:



- Click the “Next” button on the following screen:



6. Click the “Yes” button in the dialog that pops up:



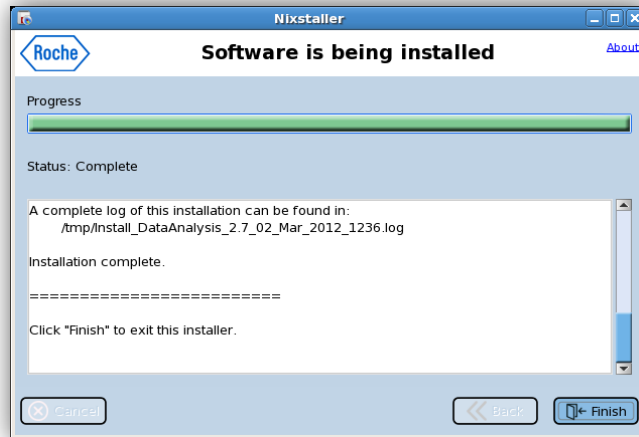
7. Click the “Next” button on the following screen:



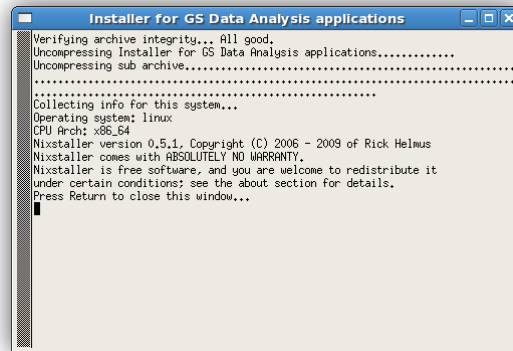
8. Type in the root password when prompted:



9. Allow the installation to proceed. Take note of the location of the installation log file for future reference. When prompted, click the “**Finish**” button to close the Setup Wizard:



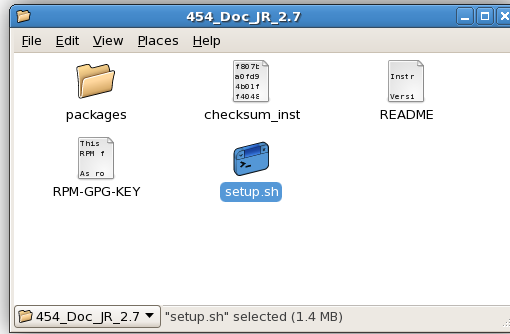
10. Return to the text-based window and hit the “Enter” key, as prompted:



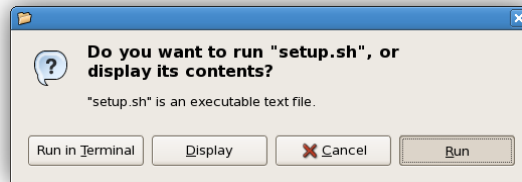
11. This concludes the procedure for upgrading to 454 Sequencing System Data Analysis Package, v2.7. If installing from the CD, eject the disk at this time. Proceed to the next section, “Upgrading to the GS Junior System Documentation Package, v2.7”.

Upgrading to the GS Junior System Documentation Package, v2.7

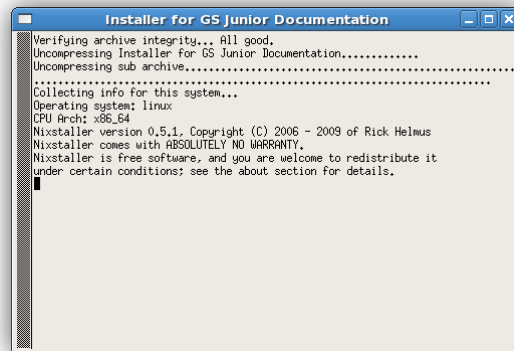
1. If installation is performed directly from the CDs, insert the GS Junior System Documentation Disk, v2.7 into the DVD drive, and wait for the system to detect the CD, automatically mount it, and open it to reveal a folder containing the **setup.sh** icon. Otherwise, the **setup.sh** icon will be present as a result of following the instructions in the earlier section “Extracting 454 Sequencing System Software Distribution files” (the window titles will be slightly different than shown here). In either case, start the installation procedure by double-clicking the **setup.sh** icon:



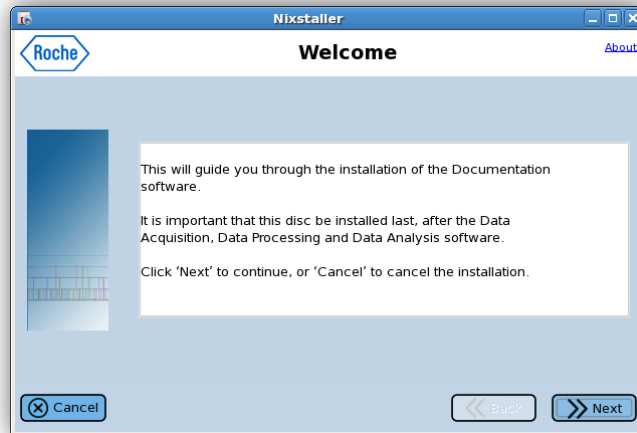
2. At the prompt, click the “Run” button to continue with the installation:



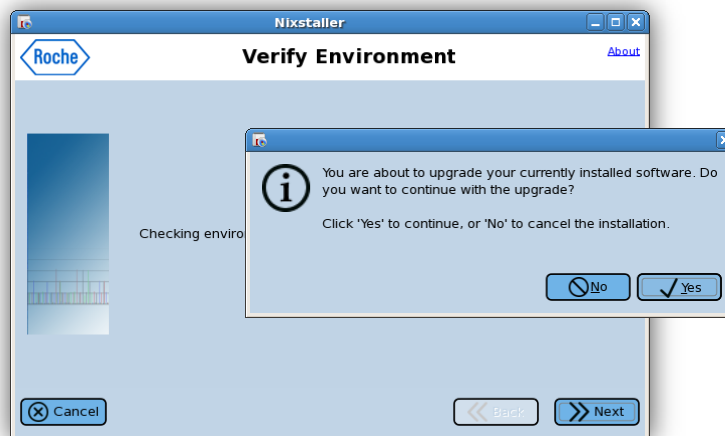
3. Two windows will open. The text-based window will run in the background and requires no interaction until the end of the Documentation install procedure.



- The other window is the Setup Wizard that requires user interaction. Click the “Next” button on the initial screen:



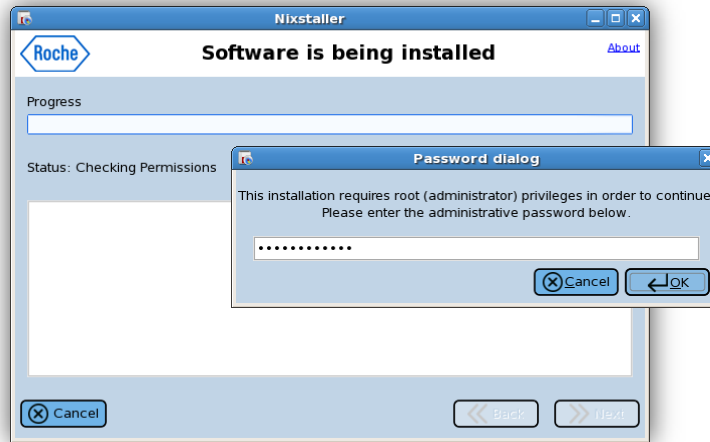
- Click the “Yes” button in the dialog that pops up:



- Click the “Next” button on the following screen:



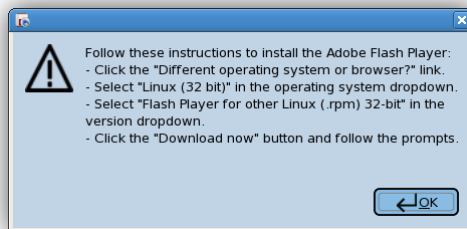
7. Type in the root password when prompted:



8. Allow the installation to proceed. A dialog will pop up asking if you would like to install the Adobe Flash Player. If you do not have an internet connection, or if you do not want to install the Adobe Flash Player, or if you have already installed the Flash Player with your previous v2.5p1 installation, then click the “No” button and skip to Step 18. If you do have an internet connection, and you would like to install the Flash Player, then click the “Yes” button and proceed to the next step.

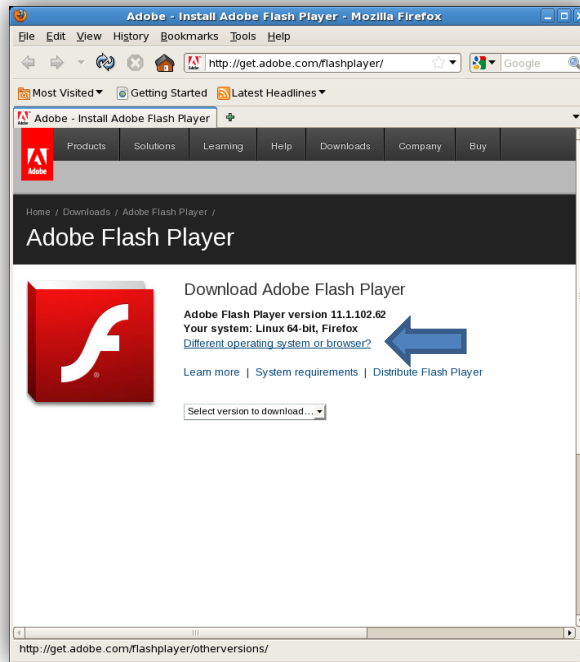


9. Click the “OK” button when prompted, but ignore the text in the pop-up and install the plug-in according to steps 10 through 17:

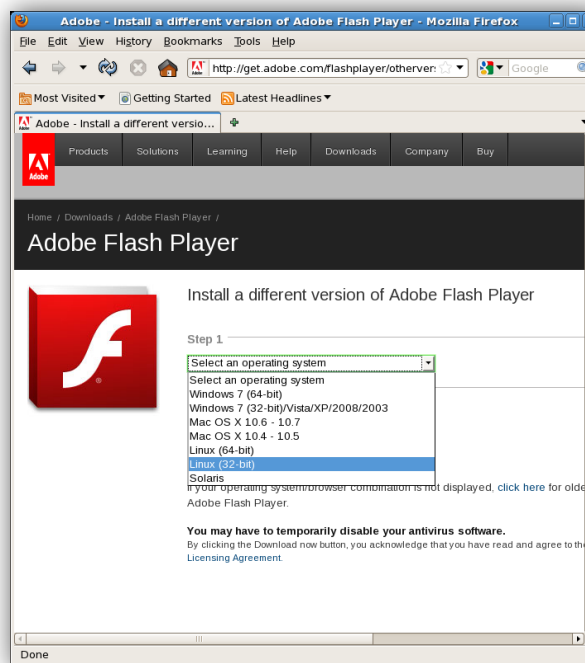


10. A web browser will open to the download page for Adobe Flash Player. The browser will correctly auto-detect that you are running on a 64-bit Linux system. However, the version of

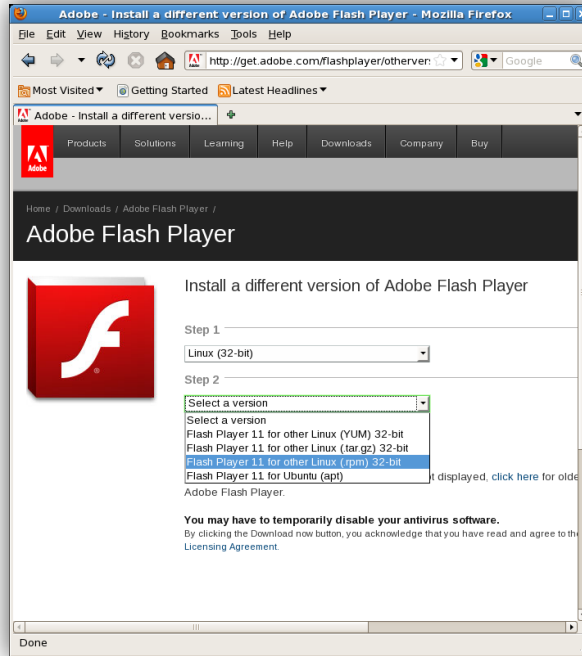
Firefox that is installed with the GS Junior Attendant PC OS Image is 32-bit. Therefore, click on the “Different operating system or browser” link:



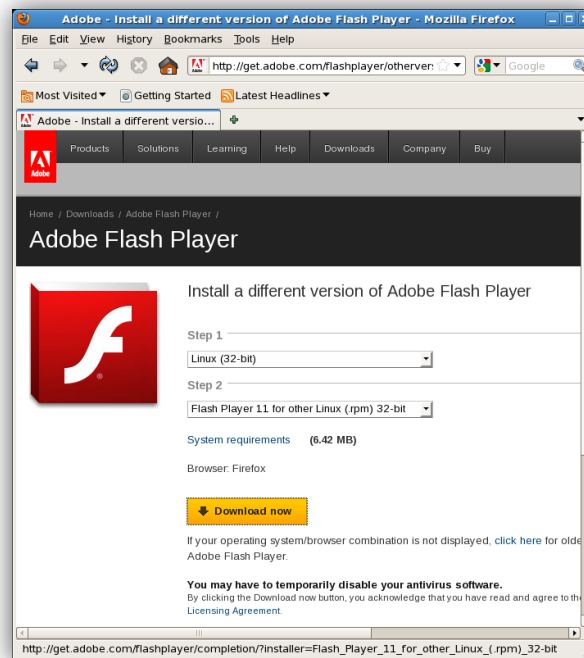
11. Select “Linux (32-bit)” from the “Select an operating system” drop-down list:



12. Select “Flash Player 11 for other Linux (.rpm) 32-bit” from the “Select a version” drop-down list:



13. Click the “Download now” button:



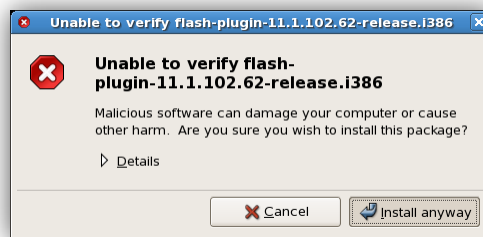
14. Type in the root password when prompted:



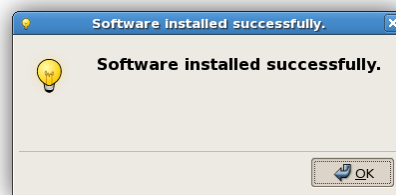
15. Click on the “Apply” button when prompted:



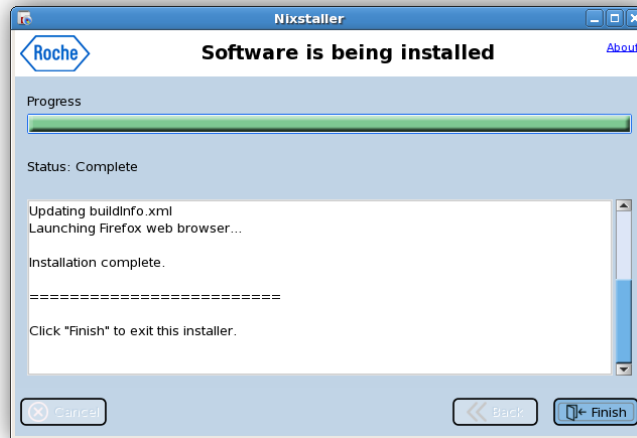
16. Click on the “Install anyway” button when prompted:



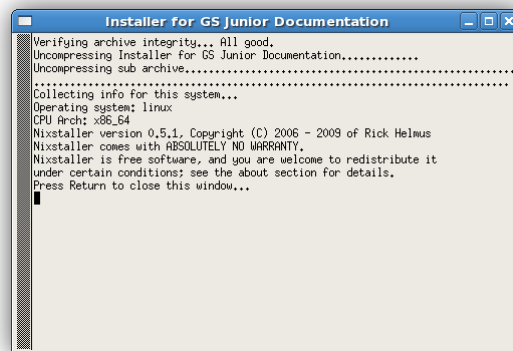
17. Click on the “OK” button when prompted:



18. Click the “**Finish**” button in the Setup Wizard to close it:



19. Return to the text-based window and hit the “Enter” key, as prompted:



20. This concludes the procedure for upgrading to GS Junior System Documentation Package, v2.7. If installing from the CD, eject the disk at this time. Proceed to the next section, “Upgrading the GS Junior Instrument Firmware”.

Upgrading the GS Junior Instrument Firmware

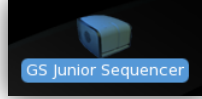


Caution: Unexpected power loss during the firmware update may result in the GS Junior Instrument being left in an unusable state. Do not proceed with the firmware update if there is a risk that power might be lost during the process.

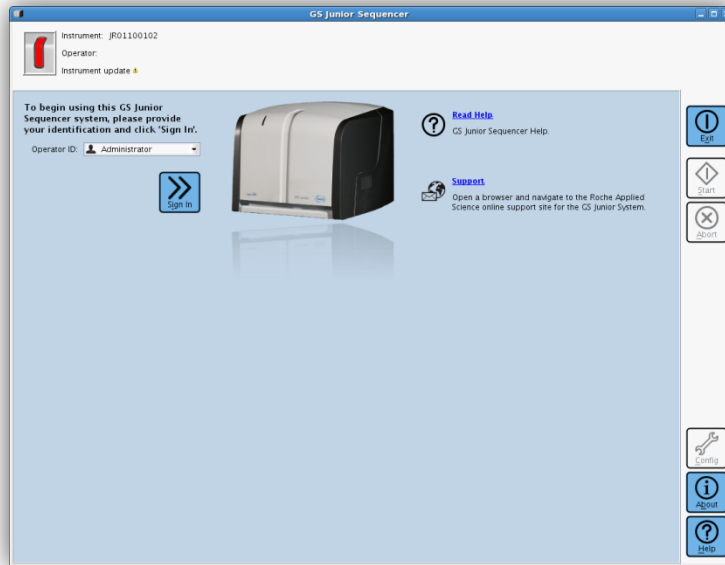
1. At the end of the prior section, “Installing the GS Junior System Documentation Package, v2.7”, the GS Junior Sequencer application should be closed, and the GS Junior Instrument should be in a powered off state (done at the beginning of the upgrade procedure).
2. Reboot the GS Junior Attendant PC.
3. While the GS Junior Attendant PC is starting back up, power on the GS Junior Instrument using the switch on the back of the unit. After a few seconds, the LED should turn on and start

blinking in a variety of patterns before quickly settling into a constant blinking yellow/red pattern. This pattern indicates the GS Junior Instrument is ready for a firmware upgrade.

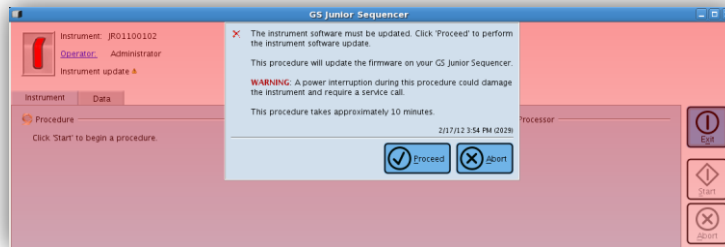
4. Log into the GS Junior Attendant PC and start the GS Junior Sequencer Control by double-clicking the icon on the desktop:



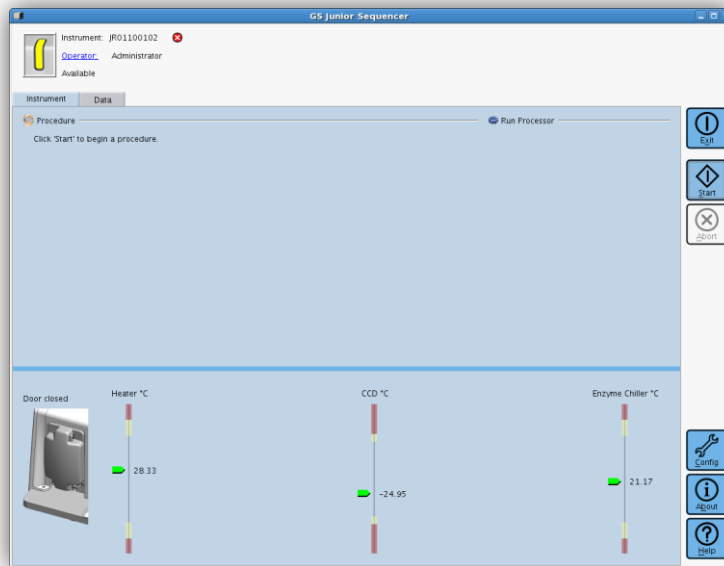
5. The LED in the GUI should be blinking red, and underneath “**Operator:**”, you should see the “Instrument Update” notification, with a warning icon. Sign into the Instrument:



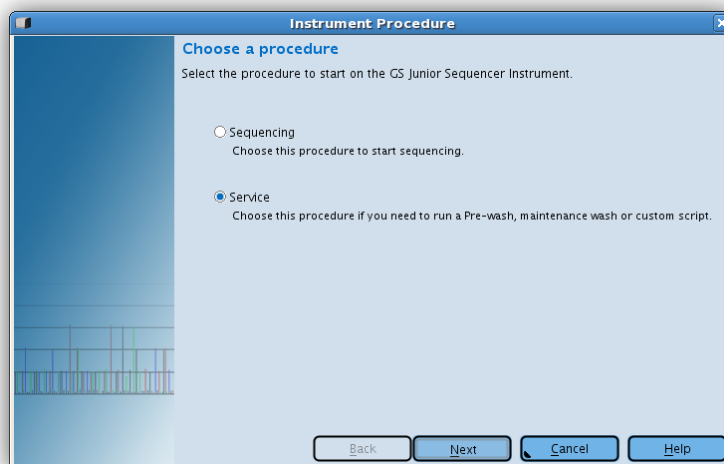
6. Click on the “Proceed” button when prompted:



- This part of the update takes approximately 10 minutes to complete, including an Instrument Self-Test. Once you see the following screen, where the status reads “**Available**” (it’s not really) and there is an error icon next to the Instrument name, click on the “**Start**” button to begin the next phase of the update:



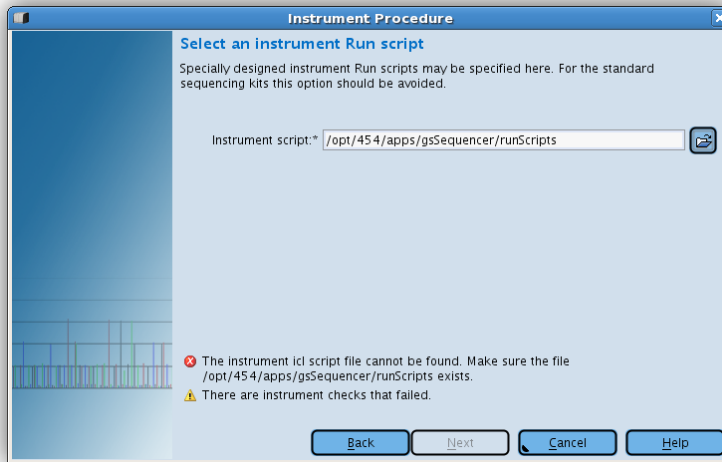
- Select “Service”, and click the “Next” button:



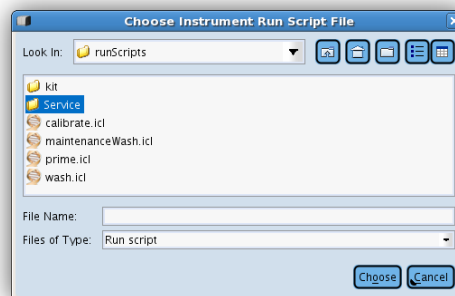
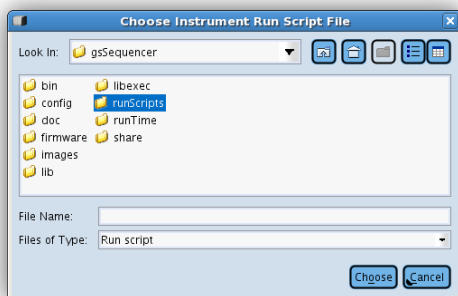
9. Select the “Custom script” icon, and click the “Next” button:

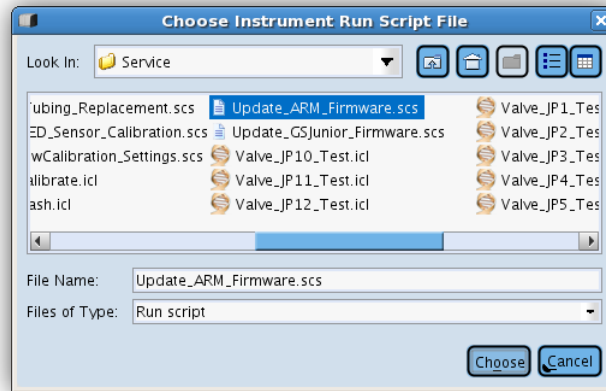


10. In the Instrument Procedure window, click on the folder icon to open a file chooser:

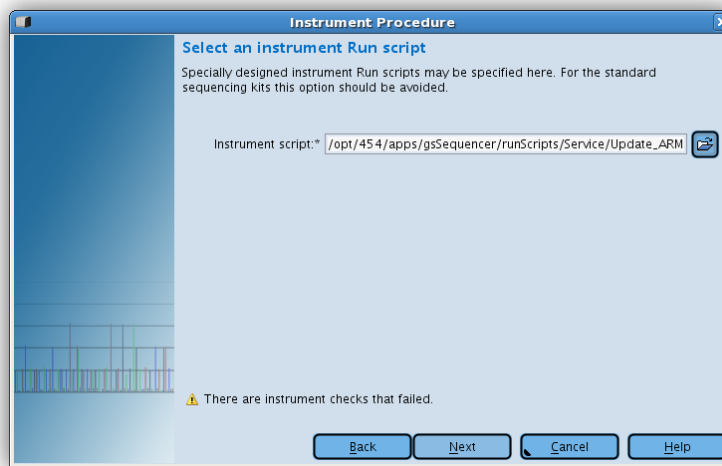


11. In the file chooser, navigate to the RunScripts/Service/ directory, select “Update_ARM_Firmware.scs” (not the other script immediately below it), and click the “Choose” button:

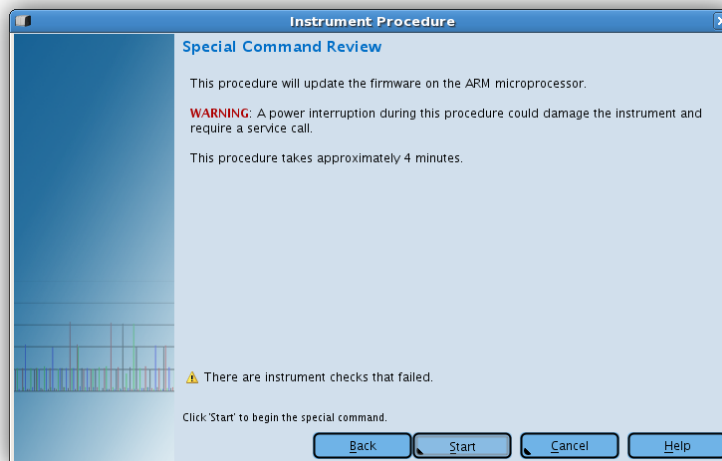




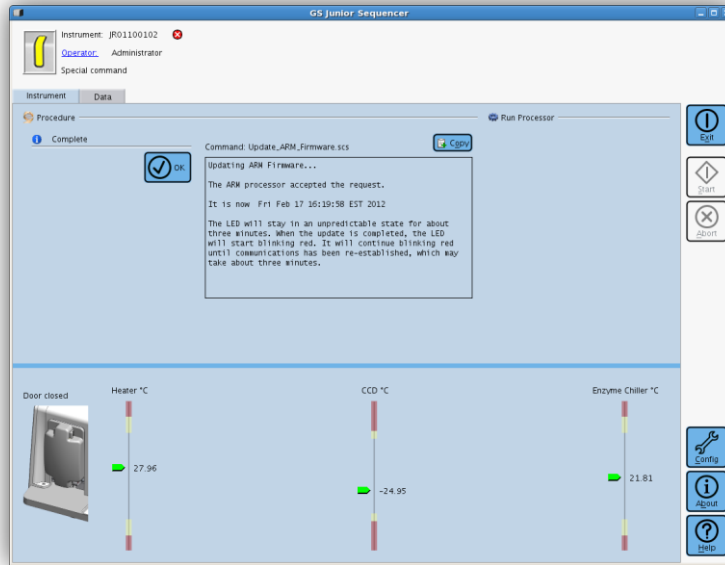
12. In the Instrument Procedure window, click on the “Next” button:



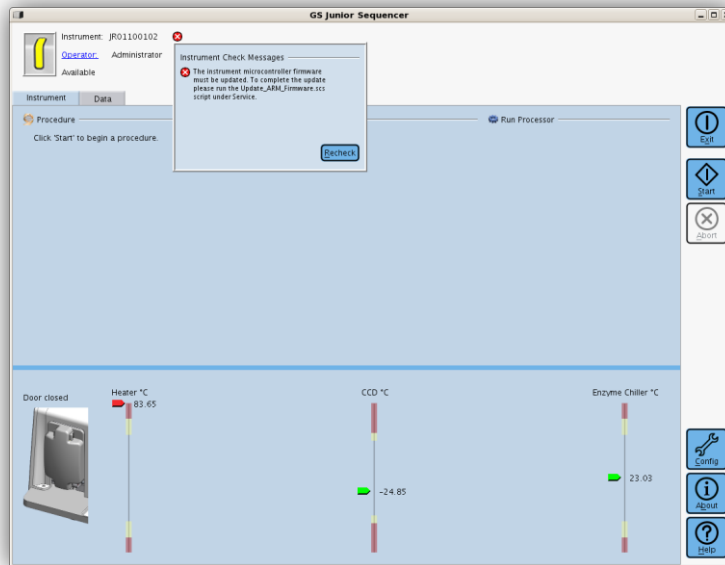
13. In the next window, click on the “Start” button:



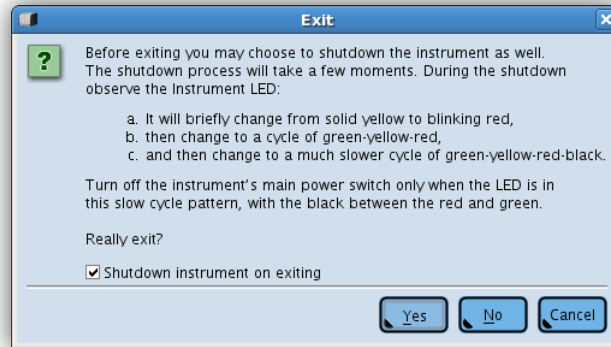
14. The GS Junior Sequencer window will immediately tell you the Procedure is complete. However, this only refers to the fact that the custom script has been successfully run. The actual update that is triggered by that script is still proceeding, as indicated in the log window. Click the “OK” button:



15. Over the course of approximately 10 minutes, the Instrument LED will go from solid yellow for a few minutes, to a period of various blinking patterns, back to solid yellow. Once this happens, click on the red “X” and click on the “Re-check” button:



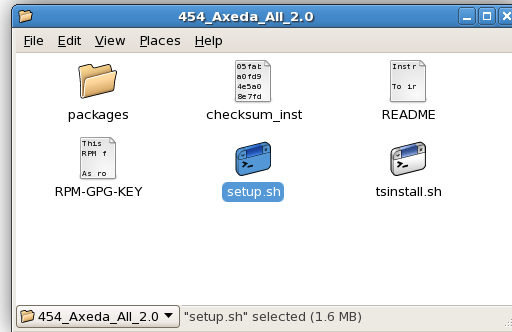
16. After the instrument self-test is complete, the status will become “Available”. Shut down the Instrument by clicking on the “Exit” button, making sure the “Shutdown instrument on exit” checkbox is checked, and clicking on the “Yes” button”:



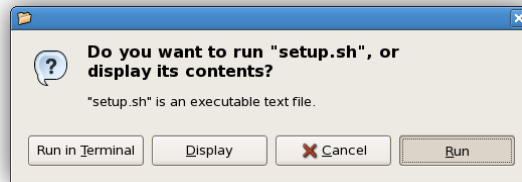
17. Once the Instrument LED is steadily blinking green/yellow/red, turn off the power using the switch at the back of the Instrument.
18. Reboot the GS Junior Attendant PC.
19. While the GS Junior Attendant PC is starting back up, power on the GS Junior Instrument using the switch on the back of the unit.
20. This concludes the procedure for upgrading the GS Junior Instrument firmware. If you would like to install the optional Axeda Teleservice package, proceed to the next section, “Upgrading to the GS Junior System Teleservice Package, v2.7”.

Upgrading to 454 Sequencing System Teleservice Package, v2.7

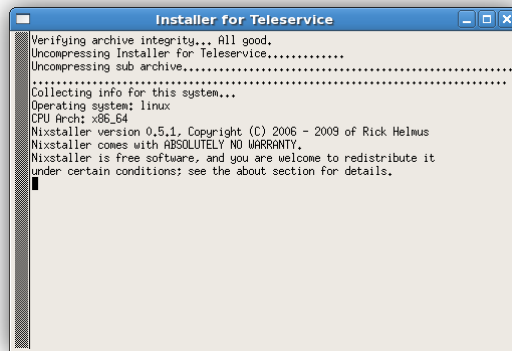
1. If installation is performed directly from the CDs, insert the GS Junior System Teleservice Disk, v2.7 into the DVD drive, and wait for the system to detect the CD, automatically mount it, and open it to reveal a folder containing the **setup.sh** icon. Otherwise, the **setup.sh** icon will be present as a result of following the instructions in the earlier section “Extracting 454 Sequencing System Software Distribution files” (the window titles will be slightly different than shown here). In either case, start the installation procedure by double-clicking the **setup.sh** icon:



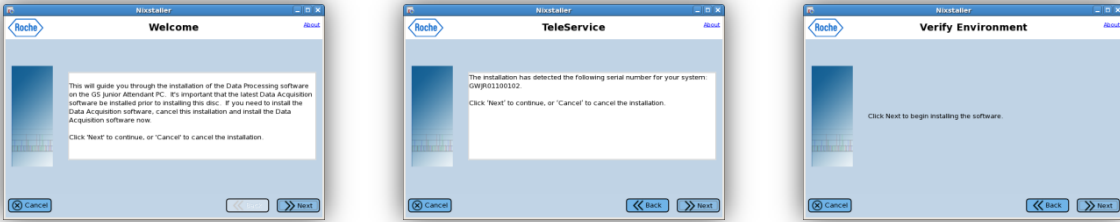
2. At the prompt, click the “Run” button to continue with the installation:



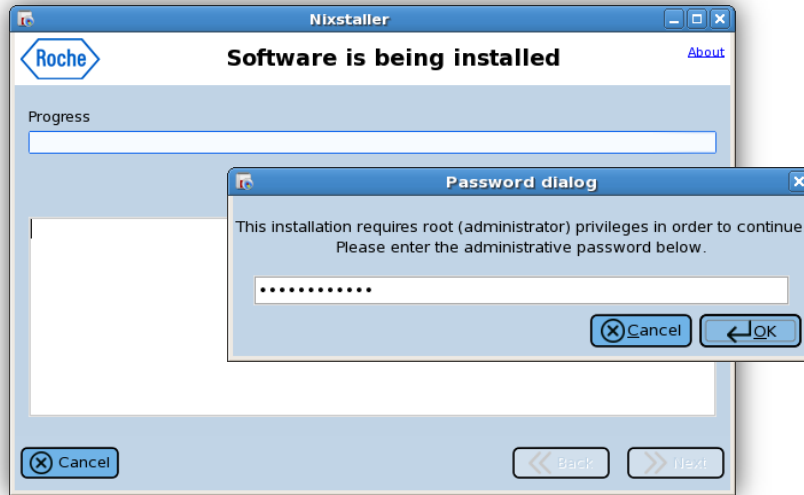
3. Two windows will open. The text-based window will run in the background and requires no interaction until the end of the Data Processing install procedure.



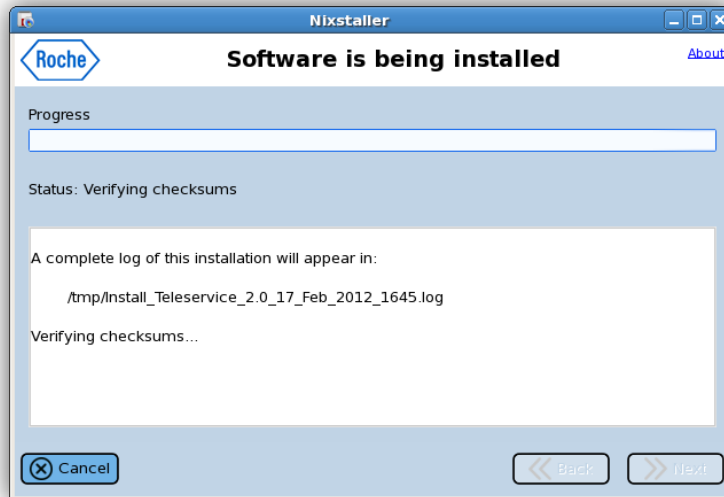
- The other window is the Setup Wizard that requires user interaction. Click the “Next” button on the first three screens:



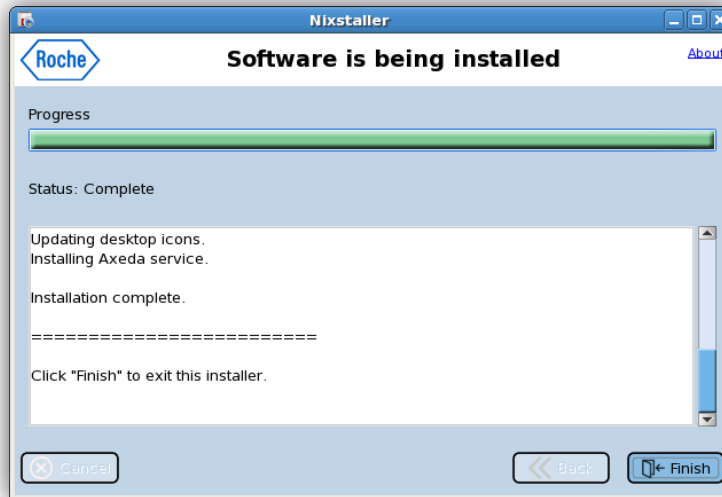
- Type in the root password when prompted:



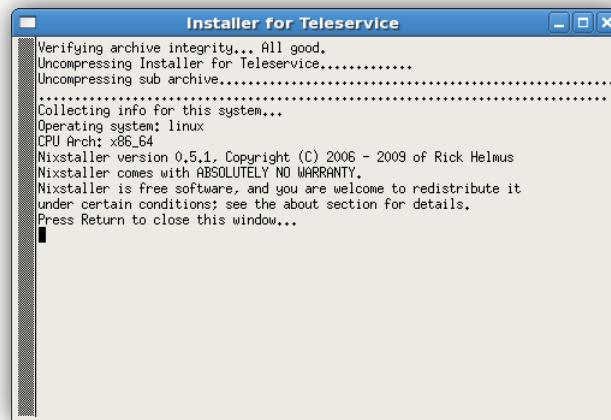
- Allow the installation to proceed. Take note of the location of the installation log file for future reference, which is presented towards the top of the output window:



- When prompted, click the “**Finish**” button to close the Setup Wizard:



- Return to the text-based window and hit the “Enter” key, as prompted:



- This concludes the procedure for upgrading to the GS Junior System Teleservice Package, v2.7. If installing from the CD, eject the disk at this time.

Post-Installation Activities

Perform Instrument Test

Perform an Instrument Test according to the *GS Junior Instrument Owner’s Manual*. If the test fails, contact your Roche customer support organization for assistance.

For life science research only. Not for use in diagnostic procedures.

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