

# NextSeq Software Release Notes

**NextSeq Control Software 1.4.1**

**NextSeq Service Software 1.4.0**

**NextSeq Software System Suite 1.4.1**

**Real Time Analysis (RTA) 2.4.6**

**BaseSpace Broker 2.4.2**

**NextSeq Recipe Fragments 1.4.0**

**Sequencing Analysis Viewer (SAV) 1.9.1**

**DMA Driver 4.5.2**

**Run Copy Service 1.0.14**

**.Net 4.5.1**

***For NextSeq 500***

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## Introduction

These release notes describe key changes to software components for the NextSeq 500 since the release of 1.3.0. If you are updating from a version prior to 1.3.0, please review the release notes for 1.3.0 for information on the changes introduced in that release.

The software package includes:

- NextSeq Control Software 1.4.1
- NextSeq Service Software 1.4.0
- NextSeq Software System Suite 1.4.1
- RTA 2.4.6
- BaseSpace Broker 2.4.2
- NextSeq Recipe Fragments 1.4.0
- SAV 1.9.1
- DMA Driver 4.5.1 – no change in this release
- Run Copy Service 1.0.14
- .Net v4.5.1

## I. NextSeq Control Software 1.4.1

### NEW FEATURES:

- Added support for High Output v2, Mid Output v2, and Illumina Advantage reagent kits.
  - Added support for custom primers Index 2 for v2 reagent kits.
  - **Note:** customers using v1 reagents are recommended to stay with NCS v1.3.0.
- Added support for BaseSpace run monitoring while in standalone instrument mode. The feature is defaulted to off and can be enabled on the Manage Instrument → System Configuration → Analysis screen.
- Added a reagent purge feature to automatically purge all unspent reagents in the reagent cartridge to waste at the end of a sequencing run before starting the post-run wash. This feature is enabled by default and can be configured under the System Customization → Run Customization screen. Additionally, the system-wide setting can be overridden on a per-run basis from the Run Setup screen. The amount to pump is the difference between the total fill volumes and the amount that was tracked as pumped from each reagent well. Customers running 2x151 cycles sequencing runs should not see any changes as all of the reagents are consumed.
- User can now set the software to automatically advance to sequencing when the Pre-Run checks have completed successfully without a failure. This feature is defaulted to "off" and can be enabled in the System Customization screen → Run Customization screen.
- Added a wash selection screen where the user can choose to perform either a Quick Wash or a Manual Post-Run Wash. See the *NextSeq 500 User Guide (part # 15046563)* for manual wash instructions.

- Run Set Up Cycles Verification:
  - Added a check to the Run Setup screen to ensure the number of cycles entered for Read 1 is greater than the RTA template generation cycle. The default template generation cycle is 5.
  - User prompted with a popup warning if index 1 cycles are more than Read 1 cycles on the Run Set Up screen.
- Added Cancel/Retry option to the Pre-Run checks
- Software can now resume loading the reagent cartridge and flow cell consumables after closing the front door if the front door is opened while loading the consumables.
- Added cancel wash button to wash screen.
- Changed the line colors for the Corrected and Called Intensity Plot on the Sequencing Screen to match what would show up in SAV due to the latest changes in RTA.
  - Base A is now Red (changed from Black).
  - Base C is now Green (changed from Red).
  - Base G is now Blue (No Change).
  - Base T is now Black (changed from Green).
- The update available icon is cleared when a user runs the latest system suite installer. This clears the update icon in a case where the user has installed the software update outside of NCS.
- Added the serial number, part number, and expiration date of each consumable to the RunParameters.xml file that is saved to the run folder for each run.
- Added RunParametersVersion to RunParameters.xml to be used by consumers of RunParameters.xml to know if they can parse the file the same way.

**OPTIMIZATIONS:**

- When ending a sequencing run early, NCS will now wait for a safe state before stopping. In most circumstances, a safe state is reached within several seconds or less of initiating the stop.

**DEFECT REPAIRS:**

- Instrument health data are now correctly sent to BaseSpace Cloud instead of BaseSpace Onsite if a customer has selected to use a BaseSpace Onsite for run management.
- Fixed a bug that caused the Reagent and Buffer cartridge to be incorrectly marked as used when an error occurred before starting cluster generation.
- Fixed bug to eliminate occurrences of laser focus detecting the wrong surface.

**KNOWN ISSUES:**

- None

## II. NextSeq Service Software 1.4.0

### NEW FEATURES:

- Removed impedance test and the second Pressure Decay tests from System Checks screen.
- Added shutdown option upon failed initialization before System Check. If initialization fails, the user can choose to "Retry" or "Cancel". If the user chooses "Cancel", they have the option to "Exit to Windows" or shut down the instrument.

### DEFECT REPAIRS:

- Fix the Image Quality test coarse focus SNR failures

### KNOWN ISSUES:

- None

## III. NextSeq Software System Suite 1.4.1

### NEW FEATURES:

- Support for NCS 1.4.1/NSS 1.4.0
- Added Run Copy Service
- Added Microsoft .NET Framework 4.5.1 software to support new features in software. NCS v1.4.1 requires .NET 4.5.1. Installation will take additional 8-10 minutes to install at the beginning of the execution of System Suite Installer. This software will only be installed one time and will remain installed even if System Suite is uninstalled. This is a software utility developed by Microsoft that is used by Nextseq Control Software and RTA and must be installed on the NextSeq PC. Installation of .Net 4.5.1 is automatically included in the software suite installation process and requires a system reboot upon installation. To revert to .Net v4.5, contact Technical Support. See this link for more information.
  - Offline installer: <http://www.microsoft.com/en-us/download/details.aspx?id=40779>
- Added Microsoft Visual C++ 2013 software to support new features in software. Will take additional 1-2 minutes to install at the beginning of the execution of System Suite Installer. This software will only be installed one time and will remain installed even if System Suite is uninstalled. Microsoft Visual C++ 2013 software is installed in addition to any other Microsoft Visual C++ versions.
- Added more logging and UI feedback from the various packages being installed. The logs can be found in the Users\'currentuser\'\\AppData\\Local\\Temp folder for the 'current user' performing the install.
- Hid cmd window that pops up briefly during installation.

### DEFECT REPAIRS:

- None

### KNOWN ISSUES:

- None

## IV. RTA 2.4.6

- New NextSeq quality table calibrated on v2 kits.

Q-score Bins	Mapped Q-scores
2-9	2
10-19	14
20-24	21
25-29	27
30-34	32
35-39	36

- File transfer to network location now performed by Run Copy Service application. RTA no longer performs file transfer services but now submits a request for a file transfer to Run Copy Service.
- Removed writing of text offsets and subtile offsets files to improve performance.
- Removed writing of text per cycle empirical phasing weight files to reduce file count and improve performance.

### DEFECT REPAIRS:

- None.

### KNOWN ISSUES:

- None.

## V. BaseSpace Broker 2.4.2

### NEW FEATURES:

- Added support in the installer to preserve specific configuration settings from the client's machine during upgrade.
- Added a new copy policy mode, AtomicAndSignalled, to allow uploading a file once when it's created, and then again when another signal file is created (similar to the existing Signalled mode). This allows for reuploading a file that is modified once at the end of a run.
- Added the ability to configure whether the applications monitor file system events from the operating system for changes in the run folder, or periodically reads the contents of the run folder to detect new and modified files.

### DEFECT REPAIRS:

- Fixed a memory leak that would cause increasing memory consumption throughout the duration of a run.
- Fixed a condition that could cause the windows service to stop responding while attempting to start.
- Fixed a bug that could cause external systems to fail to write files to the run folder.

- Fixed a bug that could cause all file uploads to stop, requiring the windows service to be restarted.

**KNOWN ISSUES:**

- An aborted or canceled sequencing run can lead to a loss in data uploaded to BaseSpace due to polling interval of Broker service.

## VI. NextSeq Recipes 1.4.0

**NEW FEATURES:**

- Added recipes to support v2 reagent kits.

**DEFECT REPAIRS:**

- None.

**KNOWN ISSUES:**

- None.

## VII. Sequence Analysis Viewer 1.9.1

**NEW FEATURES:**

- Added the ability to export Imaging table to .txt file.

**IMPROVEMENTS:**

- The Tile Status Tab and TruSeq Controls tab have been deprecated.
- Addition of a dropdown option for displaying 10 most recent runs loaded.
- Flow cell chart in Analysis screen updated to display outliers.
- Added dashed lines in to data by cycle chart to indicate start of each read.
- Added a key to the Data by Lane chart.
- The run level summary values within the summary tab for the following fields have been removed:
  - Yield Perfect (G)
  - Yield <= 3 errors (G)
  - % Perfect [Num Cycles]
  - % <= 3 errors [Num Cycles]
  - % Intensity Cycle 20
- Updated the phasing/prephasing calculations from median to mean in the run level summary table.
- The functionality to export IVC plots has been removed from the summary tab. Each plot can still be copied to the clip board by right-clicking the plot in the Analysis tab.
- A number of improvements have been made to the Imaging table:
  - Improved column heading formatting

- Added Tile Number and read drop downs
- Removed Index Column
- Removed Contrast Min (per channel)
- Removed Contrast Max (per channel)
- Improved performance in the speed at which data is loaded.
- Improved error handling of missing InterOp files.
- The display will now automatically refresh after the run data is loaded.
- The order and color of bases on Run Screen → Intensity plots have been updated:
  - Base A is now Red (changed from Black).
  - Base C is now Green (changed from Red).
  - Base G remains Blue.
  - Base T is now Black (changed from Green).
- Application now checks for the presence of the RunInfo.xml file prior to loading a run data folder.

**DEFECT REPAIRS:**

- Fixed exception handling of issue if user tries to access the clipboard at the same time to prevent SAV crash.
- Fixed table and graph selection/refresh bugs.

**KNOWN ISSUES:**

- Windows Control Panel, Programs and Features can show entries for previously installed version after updating.

## VIII. DMA Driver 4.5.2

No changes were made to this application in this release.

## IX. Run Copy Service 1.0.14

**NEW FEATURES:**

- This new release of Run Copy Service handles the file copy functionality previously executed by RTA. The service is initiated by Nextseq Control Software and the file copy requests are serviced in the order they are received. This software runs in the background and should not be interfered with during and after a sequencing run.