

NovaSeq X Plus Software Release Notes

NovaSeq X Plus Control Software 1.2.0

Firmware 1.2.10

Image Analysis Gateway 1.10.10

Universal Copy Service 2.9.0

Real-Time Analysis 4.6.7

Illumina Run Manager 1.6.374

Associated with DRAGEN 4.1.23

October 2023

INTRODUCTION

This document details new features, improvements, and known issues for the NovaSeq X Plus Sequencing System Software Suite v1.2.0. This Software Suite adds additional flowcell support and improves sequencing robustness and the user experience with improved notifications, warnings, and error messages across workflows including maintenance wash, Firmware upgrade, Illumina Run Manager, Control Software, and Initialization.

We recommend that you contact Illumina [support](#) to upgrade to Software v.1.2.0.

For more information on the NovaSeq X Plus Sequencing System, see the NovaSeq X Plus Product Documentation available on the [NovaSeq X Plus Sequencing System Support Site - Support Resources - Documentation page](#).

The software package includes:

- NovaSeq X Plus Control Software 1.2.0
- Firmware 1.2.10
- Image Analysis Gateway 1.10.10
- Universal Copy Service 2.9.0
- Real-Time Analysis 4.6.7
- Illumina Run Manager 1.6.374
- NovaSeq X Plus recipes 1.2.0

Instrument Network Configuration application will be uninstalled

NOVASEQ X PLUS CONTROL SOFTWARE 1.2.0

NEW FEATURES

Control Software – General

- Added 1.5B and 25B flowcell support, including updated pre-run checks, consumables compatibility checks, estimated run completion time, and recipes. Note: 1.5B kits are not enabled in the initial release, they will require an additional recipe update. Running a 1.5B kit prior to that recipe update will result in an error during pre-run checks.
- 1.5B flow cell will be fully enabled upon launch of 1.5B reagent kits via recipe update.
- Enabled dual-sided runs with cross flowcell types (e.g., 1.5B-10B, 1.5B-25B, 10B-25B). Staggered run starts are not currently supported.
- Added performance improvements for 10B reagent kits via recipe improvements which improve yield and overall sequencing robustness.
 - There is no change to the chemistry or design of the flowcell.
 - Updates include clustering robustness improvements, improved laser power curves, Q30 improvements, and RTA (real-time analysis) update with new Q-tables.
 - Customers should evaluate these changes for testing or validation as needed.
- Added setting for user configurable primary data transfer (BCL data folder) in Instrument settings and on a per-run basis during run review available for runs with local analysis

- Updated settings screens to make External Storage, Custom Kits, Applications, and Resources available to all users
- Self-signed TLS certificates renewed for longer duration after Control Software 1.2.0 update.
- Updated fields included in RunCompletionStatus.xml
- Added support for setting Instrument Nickname in Instrument settings
- Updated error messaging for failed disk space checks during Pre-Run Checks
- Updated warning message for terminating previous run's secondary analysis
- Added data copy for runs that fail prior to onboard cluster generation completion.

Control Software – User Experience

- Users will receive warnings within 30-day timeframe of TLS cert expiration.

Control Software / Service Software

- Updated instrument icon for Service Software to better distinguish from Control Software.

Hardware- Improvements

- Improved robustness and sensor reporting.
- Improvements to focus tracking
- Additional improvements to prevent wash cartridges from drying out.

BUG FIXES

Control Software – User Experience

- Fixed an error encountered when locking doors without loading consumables on the Unlock Doors screen
- Updated Log Bundler to collect logs associated with 2 most recent runs performed on instrument

RESOLVED ISSUES

N/A

KNOWN ISSUES

- Data will not copy to output folder for cancelled runs

UNIVERSAL COPY SERVICE 2.9.0

NEW FEATURES

- Added upload option for using MD5 or CRC32 checksum algorithms
- Configurable log configuration file path

REAL-TIME ANALYSIS 4.6.7

NEW FEATURES

- Support for 25B flow cell and 10B flow cell
- [Quality tables calibrated.](#)
 - [The legacy bins of Q12, Q20 and Q37 are adjusted upwards to Q12, Q23 and Q40.](#)
 - [A blogpost is published on Illumina.com that details the Q-score improvements and their implications here.](#)
- Log rotation increased to 300 files

ILLUMINA RUN MANAGER 1.6.374

NEW FEATURES

- Enabled DRAGEN Uninstall from the user-interface (UI).
- Updated SBC Disk Space user interface
- Additional instrument performance data (non-run metrics) now uploaded to Proactive
- First time set up enhancements (for instruments not connected to the internet and proxy configurations)
- Runs list loading time improvements.
- Planned runs list sorted in descending order with filtering enabled.
- Added DRAGEN multi-version support with minimum version enforcement of DRAGEN 4.1.7.
- Added support for planning runs using configurations with multiple DRAGEN versions
- Updated user permission guidance to allow Sequencer Operators to perform more operations than before
- Optimized validation performance, including import time for complex sample sheets

BUG FIXES

- Run status workflow improvements including runs getting stuck in various states

RESOLVED ISSUES

N/A

KNOWN ISSUES

- DRAGEN screen will display “Install status unknown” and “Not executed” for DRAGEN 4.1.7 after update to Control Software v1.2
- System will fail second run’s requeue if two runs are requeued simultaneously
- On the Run Details screen, analysis status will only be marked as complete when analysis file transfer to external storage is also completed, resulting in reported DRAGEN runtimes longer than actual DRAGEN runtimes

ASSOCIATED WITH DRAGEN 4.1.23

Note: It is acceptable to maintain multiple versions of DRAGEN and Applications on-instrument. The minimum version of DRAGEN compatible with Control Software v1.2.0 is DRAGEN 4.1.7. Updating to the latest versions of DRAGEN and Applications is recommended. Consult the [NovaSeq X Plus Sequencing System Software Downloads](#) page for DRAGEN software and DRAGEN application details.

- Additions to existing pipelines:
 - DRAGEN Germline:
 - Added CYP21A2 and StarAllele targeted callers
 - Added options to specify QcCoverage1BedFile, QcCoverage2BedFile, QcCoverage3BedFile, and QcCrossContaminationVcfFile inputs
 - Allowed BAM tags to be propagated into sample BAM headers for imported sample sheets
 - DRAGEN RNA
 - Gene fusion accuracy improvements
- Added new pipelines:
 - DrogenMethylation [2]
 - DrogenSomatic
 - Includes new resource files: CNV population SNP VCF, Somatic Noise Baseline File, Somatic Germline Tagging File
- Multi-version capability^[1]
- Error handling to prevent storage from filling
- Various bug fixes and changes to improve robustness
- Known issues:

- BAM file is retained for the DRAGEN Methylation workflow if MapAlignOutFormat is set to none..

[1] When using DRAGEN 4.1.7 in a non-BCL Convert workflow in a multi-version configuration, the BCL Convert section must contain version 4.1.7 if FASTQ files are saved. This requires sample sheet import mode to be used.

[2] Updated Methylation genomes are available for use with this workflow on the NovaSeq X support site

RELEASE HISTORY

Revision	Release Reference	Originator	Description of Change
00	CN 1095615	Vince Kato	Initial Release
01	CN 1095876	Ritu Kamal	Included the Q40 changes and added a link to the blogpost.