HiSeq X Instrument Software Release Notes

HiSeq X Control Software v3.1.26

Real Time Analysis (RTA) v2.3.9

Recipe Fragments v3.0.8

.Net 4.5.1

Sequencing Analysis Viewer (SAV) v1.8.46

BaseSpace Broker v2.4.0.29

Run Copy Service v1.0.13

For HiSeqX® Systems

Nov 2014

Introduction

These Release Notes detail the key changes to instrument software components for the HiSeqX since the package containing HiSeq X Control Software v3.0.29, RTA v2.2.1, Recipe Fragments v3.0.4, SAV v1.8.37 and BaseSpace Broker v2.3.2.67.

If you are upgrading from a version prior to HiSeq X Control Software v3.0.29, please review the release notes for HiSeq X Control Software v3.0.29 for a list of features and bug fixes introduced in that version.

The software included in this release must be installed by Illumina service personnel. FPGA upgrade to v10.34.13 or later is recommended prior to the installation of this software package. If you need to update your FPGA version, please contact Illumina Technical Support. FPGA updates must be completed by a trained Illumina staff person.

Any custom recipe files will be over written by the Recipe Fragments installation: customers should recreate their custom recipes after receiving this update.

The BaseSpace Send Instrument Health data option setting will be reset by this software install to be "on". Customers should update their BaseSpace Send Instrument Health settings after receiving this update.

The software package includes:

- HiSeq X Control Software v3.1.26

- Real Time Analysis (RTA) v2.3.9

- Recipe Fragments v3.0.8

- .Net 4.5.1 – no change

- Sequencing Analysis Viewer (SAV) v1.8.46

- BaseSpace Broker v2.4.0

- Run Copy Service v1.0.13

I. HISEQ X CONTROL SOFTWARE v3.1.26

NEW FEATURES:

- Enabled HiSeq X HD v2 flow cell support

- Added improved user controls over wash options: the user can now choose between Maintenance Wash or Water Wash after every sequencing run, whether the run was successful, aborted, or errored out. A maintenance wash will no longer be enforced after each sequencing run.

  o Note that if the instrument has not been through a maintenance wash in 10 days, the user will be required to change flow cell gaskets on the next maintenance wash.

- Add channel names to RunInfo.xml for images being passed to RTA. This addition results in no change to the overall operation or performance of the HiSeqX system, but was added to streamline internal software functionality
    ```
    <ImageChannels>

        <Name>A</Name>
    ```

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                    `<Name>C</Name>`

                    `<Name>G</Name>`

                    `<Name>T</Name>`

                `</ImageChannels>`

- The order and color of bases on Run Screen → Intensity plots have been updated to match SAV color profile of bases:
  - 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).

IMPROVEMENTS:

- The Run Review screen has been updated to display PhiX alignment results per run.
- On the Run Configuration → Review screen, the "Keep Intensity Files" and "Control Lane" options have been removed. This change was made to more accurately reflect HiSeqX workflow options.
- The 'Indexing Reagent Kit ID' field has been removed from the Run Configuration → Reagents screen to more accurately reflect HiSeqX worfkflow options.
- Improved Y stage initialization/homing performance. This change was made to reduce improve overall stage robustness and reduce the possibility of stage related errors.
- Improved RTA and HiSeq X Control Software communication using memory mapped files (MMF).
- Added log file verification to check that pre and post run log files are copied to the network location.
- The flow cell vacuum switch position is now verified by HiSeq X Control Software during run setup. If the vacuum switch is not in the correct position, the user is prompted to activate the flow cell vacuum switch before proceeding with run setup.

DEFECT REPAIRS:

- None.

KNOWN ISSUES:

- A First Base Report is only produced at the end of cycle 2 imaging if 'confirm first base' box under Run Configuration → Advanced screen is selected.

II.   RTA v2.3.9

IMPROVEMENTS:

- This version includes improvements for speed and reliability.
- Decoupled file copy service functionality from RTA software.

III. Recipe Fragments v3.0.8

NEW FEATURES:

- Added new recipes supporting HiSeq X HD v2 flow cells.

DEFECT REPAIRS:

- None.

KNOWN ISSUES:

- None.

IV. Sequence Analysis Viewer 1.8.46

This version no longer supports Genome Analyzer run files. GA run files should not use any SAV version later than 1.8.37

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 on the plot in the Analysis tab.

- A number of improvements have been made to the 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).

DEFECT REPAIRS:

- None.

KNOWN ISSUES:

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

V. BaseSpace Broker 2.4.0.29

IMPROVEMENTS:

- Increased reliability and recovery abilities.

DEFECT REPAIR:

- Addressed a memory leak that could cause increasing memory consumption during a sequencing run.

KNOWN ISSUES:

- An aborted or canceled sequencing run may not be fully uploaded to BaseSpace due to the current polling interval of Broker service.

- In rare instances, users may observe a delay in uploading the data to BaseSpace. If this occurs, the Broker may be idle for a few hours. Eventually the data is uploaded successfully.

VI. .Net 4.5.1

- No changes in this release.

- This is a software utility developed by Microsoft which is used by HiSeq X Control Software and RTA and which must be installed on the HiSeq X PC. Installation of .Net 4.5.1 is automatically included in the software suite installation process. Please see this link for more information.
    - Offline installer: http://www.microsoft.com/en-us/download/details.aspx?id=40779

VII. Run Copy Service v1.0.13

NEW FEATURES:

- This new release of Run Copy Service handles the file copy functionality previously executed by RTA. The service is initiated by HiSeq X 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.