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Customer Release Notes

DRAGEN Germline v3.10.12

for NextSeq 1000/2000

February 6, 2023

INTRODUCTION

These Release Notes detail the key changes to the DRAGEN Germline Pipeline onboard NextSeq 1000/2000 since the v3.8.4 release. If you are updating from an older version, please see all intermediate release notes.

INSTALLATION INSTRUCTIONS

DRAGEN v3.10.12 is compatible with Control Software 1.2, 1.3, 1.4 and 1.5. For information regarding compatibility with other Control Software versions, please reference the NextSeq 1000/2000 Compatible Products page on the Illumina support site. If you would like to update the control software, please follow the steps detailed in the NextSeq 1000/2000 Control Software Suite v1.5.0 Release Notes on the Illumina Support Site.

ONLINE INSTALLATION WITH V1.3+ CONTROL SOFTWARE

* **These instructions are intended for online installation of DRAGEN pipelines with v1.3 Control Software and beyond**

Starting with v1.3 Control Software, cloud-based updates for DRAGEN are enabled.

1. Make sure that you have the password to the ilmnadmin account.
2. Log in to the ilmnadmin account:
   a. If you are already logged in as ilmnuser and in control software, select the control software menu, and then select **Exit Application** to access the desktop.
   b. Select the power button icon in the upper right corner and log out of ilmnuser.
   c. After you are on the login screen, select ilmnadmin, and then enter the password to log in.
   d. The control software automatically launches once you are logged in.
3. Select the **DRAGEN** screen in the control software.
4. Click on **check online** button in the DRAGEN workflows section.
5. A modal will pop up showing which workflows have an update available for installation.
6. Select which pipelines you would like to update.
   a. **NOTE: For Online Updates, DRAGEN BCL Convert must be installed before or with other workflows of the same DRAGEN Version**
7. Select download and install.
8. You will be prompted to enter the admin password once the download completes and proceeds to install
9. After installation is complete, you will be navigated back to the DRAGEN screen and can view the updated list of installed DRAGEN workflows.

Note that starting with control software v1.5, it is possible to uninstall previous versions of DRAGEN pipelines.

OFFLINE INSTALLATION/ INSTALLATION WITH V1.2 CONTROL SOFTWARE

* **These instructions are intended for offline installation of DRAGEN pipelines or installation with v1.2 Control Software (whether online or offline)**

1. Make sure that you have the password to the ilmnadmin account.
2. Log in to the ilmnadmin account:
    a. If you are already logged in as ilmnuser and in control software, select the control software menu, and then select **Exit Application** to access the desktop.
    b. Select the power button icon in the upper right corner and log out of ilmnuser.
    c. After you are on the login screen, select ilmnadmin, and then enter the password to log in.
    d. The control software automatically launches once you are logged in.
3. The DRAGEN installation files require up to 8 GB of free space on your desktop.
    a. To access your desktop, select the control software menu in the control software, and then select **Minimize Application**.
    b. Delete or transfer files off the desktop that are not needed.
    c. Empty trash to free space from the drive.
        i. Select **Applications**, and then **Files** from the upper left corner of the desktop to launch the file explorer.
        ii. On the left panel of the file explorer, right click the Trash icon and select **Empty Trash**.
4. Launch Chromium to download the software upgrade installers from the Illumina Support Site.
    a. While in desktop view, open the Applications menu on the upper left corner. Select **Internet**, and then select **Chromium**.
        i. **Note: After launching Chromium, you may receive a prompt to unlock your login keyring. You can safely ignore and cancel out of the prompt.**
    b. Use Chromium to browse to the NextSeq 1000 and 2000 Software Downloads page on the Illumina Support Site.
5. Download the DRAGEN upgrade installers from the Illumina Support Site and save them to the desktop. **Do not extract these files; leave them as .tar.gz**
    a. **Note: at minimum, you must download and install the DRAGEN BCL Convert update.**
6. After the files have finished downloading to the desktop, maximize the control software by selecting it from the toolbar.
7. **Install DRAGEN workflows**
    a. Select the control software menu, then select **DRAGEN**.
    b. In the Version section, select **Browse for New Version**.
    c. In the browse window, navigate to the desktop and double-click the DRAGEN Germline workflow *.tar.gz package.
        i. **Note: DRAGEN BCL Convert must be installed before other workflows**
    d. In the control software DRAGEN window, select **Install**.
    e. At the login prompt, enter the ilmnadmin password.
    f. Confirm that DRAGEN Germline is updated to 3.10.12.

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NEW FEATURES:

- Improved variant phasing for CYP2D6
  - Read-backed phasing is used to distinguish variants in CYP2D6 from CYP2D7 gene conversions. Variant sites are phased with nearby sites having a sequence difference between CYP2D6 and CYP2D7 that is fixed in the population
  - CYP2D6 caller can now detect 3 additional star alleles (*27, *32, *139), for a total of 128 different star alleles defined by the Pharmacogene Variation (PharmVar) Consortium
- Improved performance of ORA compression
  - CPU performance has been optimized, and compression ratio is slightly improved. A new ORA reference (index v2) has been made available. With the new reference, a 30- 35% reduction in CPU usage and 5% improvement in output size is achieved.

FIXED ISSUES:

Fixed for these issues specific for NextSeq 1000/2000 Platform:
- Fix for false DRAGEN license failure notifications
- Fix for failure in demux metrics indicator
- Fix for SampleSheet Validation when selecting dragen FastqCompressionFormat for BCL

KNOWN ISSUES:

Component/s	Defect ID	Issue Description	Remedy / Workaround
BCL	DRAGEN-20064	BCL convert aborts with an empty [BCLConvert_Data] section in v2 sample sheets	BCL convert aborts when there is empty [BCLConvert_Data] or [BCLConvert_Settings] sections in v2 sample sheets. Workaround, add enties to the sections.
BCL	DRAGEN-19323	BCL Strict Mode does not abort when *.bci lane file corrupted via truncation	No workaround. The strict mode check misses some input error modes.
BCL	DRAGEN-17015	Incorrect Error Message for Missing BCL Input Directory	Ignore the incorrect error message when --bcl-input-dir is missing
DNA Alignment	DRAGEN-16468	Bam generated from file conversion CRAM -> BAM with hg19_alt_masked_v2 reference has invalid header	Reproducible issue that has been shown to have existed since v3.7 or earlier. When converting from CRAM to BAM using dragen "file-conversion" method, the BAM has an invalid header due to a bug in the CRAM reader. No workaround. Re-header the file

Component/s	Defect ID	Issue Description	Remedy / Workaround
DNA Alignment	DRAGEN-16467	Germline workflow is slower with graph hash table	Dragen run time is roughly 6.3% slower with graph aligner and graph reference is used, compared to non-graph. The increased run time is in both mapper and variant caller phases. No workaround

RELEASE HISTORY

Revision	Release Reference	Originator	Description of Change
00	CN 1081788	Heidi Norton	Initial release