ion torrent

Torrent Suite™ Software 5.4 Release Notes

Publication No. MAN0017145 Rev. B.0

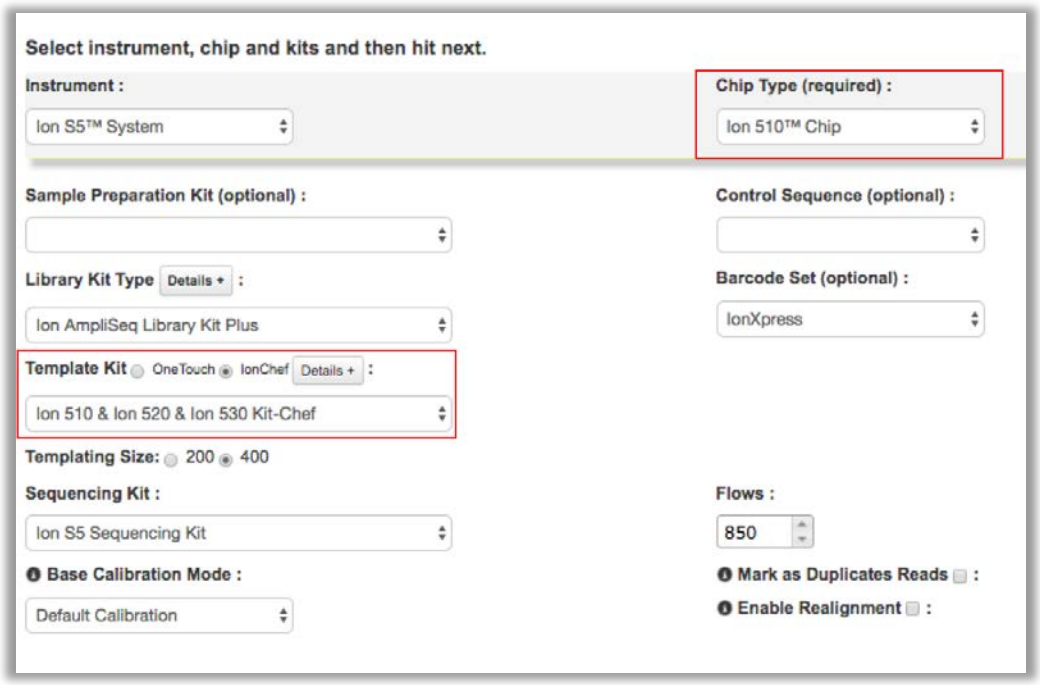
Torrent Suite™ Software 5.4 is an update to the previously released Torrent Suite™ Software 5.2.2. This document highlights the main changes and known issues in the software. See the *Torrent Suite™ Software Help* for more information.

Contents

New Features

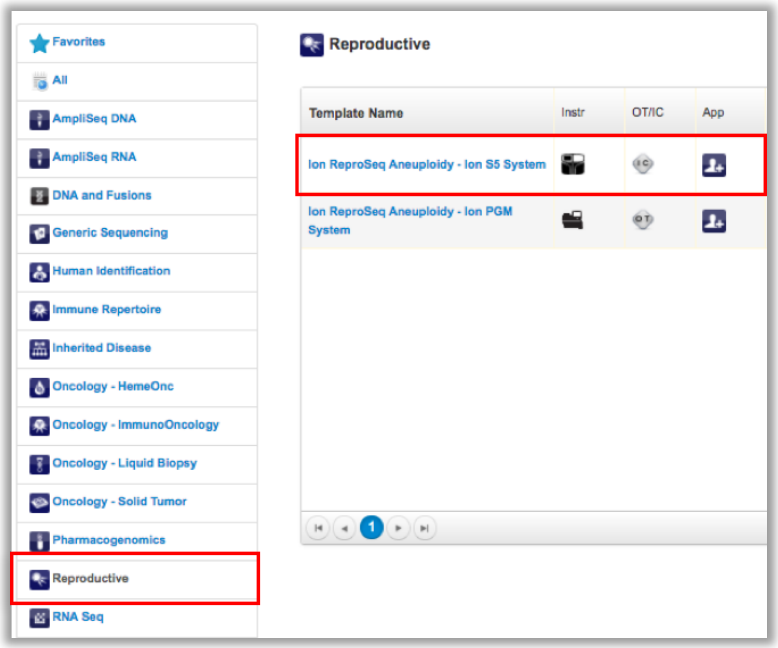
Launch of the new Ion 510 Chip

Torrent Suite™ Software 5.4 (TSS 5.4) offers complete support for the newly introduced Ion 510 chip. Analysis arguments and options for the Ion 510 chip are now included in the Planned Run screens.



Support for the new Ion ReproSeq PGS kits on the Ion S5 system

A new system template is available for use with the new Ion Reproseq PGS kits that run on the Ion S5 system. The template is available under the Reproductive application category.

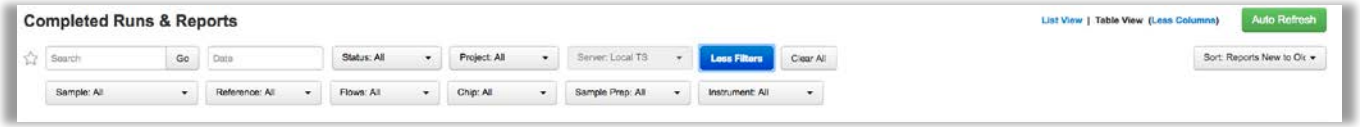


A new End User License Agreement (EULA) acceptance screen

TSS now requires you to explicitly agree to the EULA before upgrading to the new version of the software. Note: users upgrading to TSS 5.4 through the TS UI will not see the EULA acceptance screen. It will appear when they upgrade from TSS 5.4 and beyond.

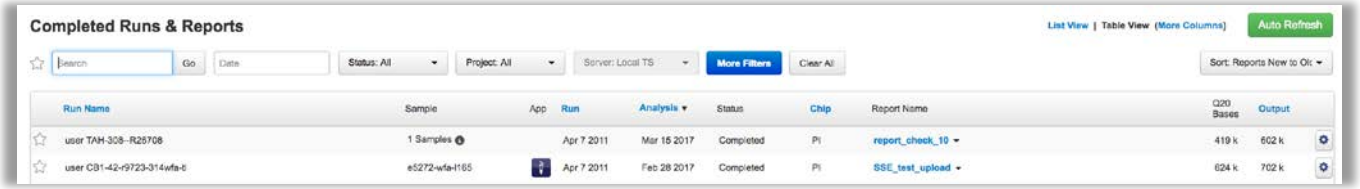
Completed Run and Reports page now includes new filters

The completed run and reports page now comes with more powerful and better organized filters for each of the column of displayed results. One new filter for sample prep instrument type is included.



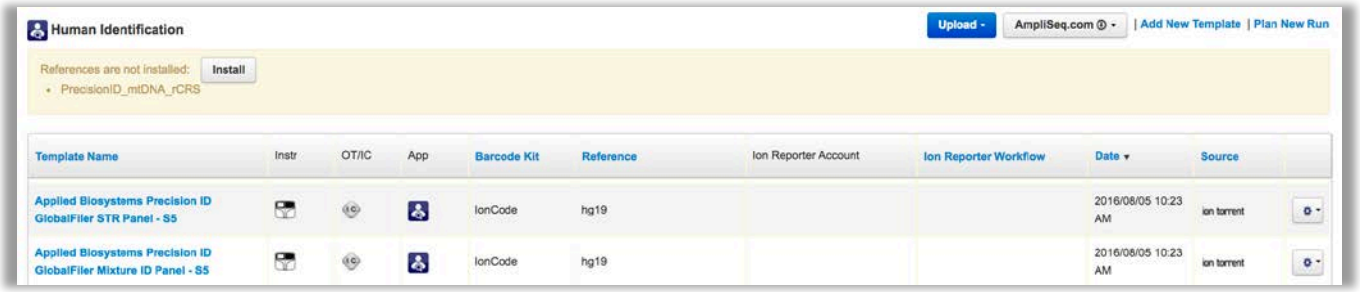
Redesigned Completed Runs & Reports page

The Completed Runs & Reports page has been redesigned to make it clutter free. Users now have the option to view either a simplified table with reduced numbers of columns (default view) or a table with all the columns. Also, users can select which reports to view for a given run by clicking on the Report Name dropdown handle.



Pre-loaded Ion Reference files can be installed from within Torrent Browser

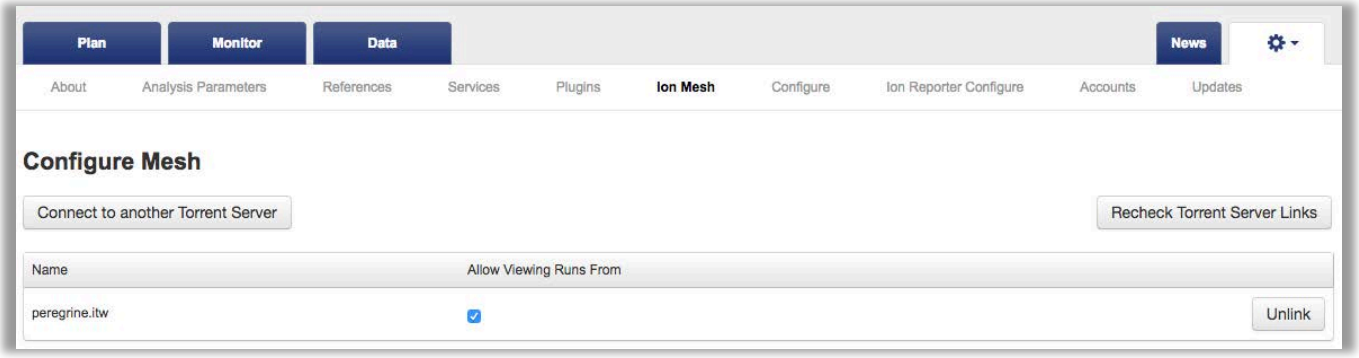
You can now install Reference and BED files (available under ion pre-loaded references) needed for an assay from within Torrent Browser. These files are available for install from the **Templates** page. However, design files for Oncomine™ panels are still available from field representatives for paying customers.



Note: The Install button is visible only if there are files available to be downloaded.

Improvements to Ion Mesh

The Torrent Browser now comes with a feature that allows you to configure Ion Mesh from within the UI. The data page also lists out runs on different TS instances in a single location.

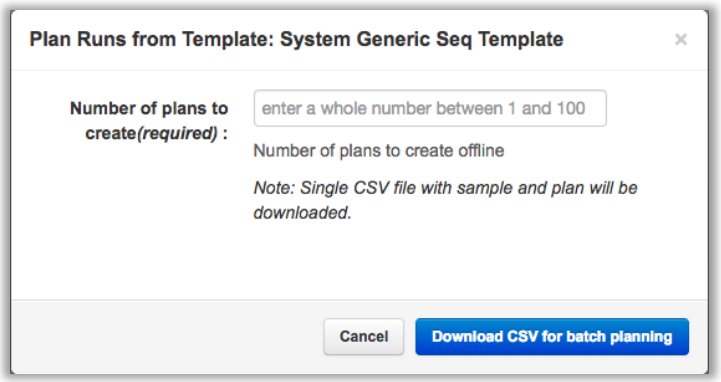


Off-cycle Ion Chef™ script updates

TSS 5.4 includes a mechanism to release off-cycle Ion Chef™ script updates. This enables the release of important improvements/bug fixes in the form of an off-cycle patch.

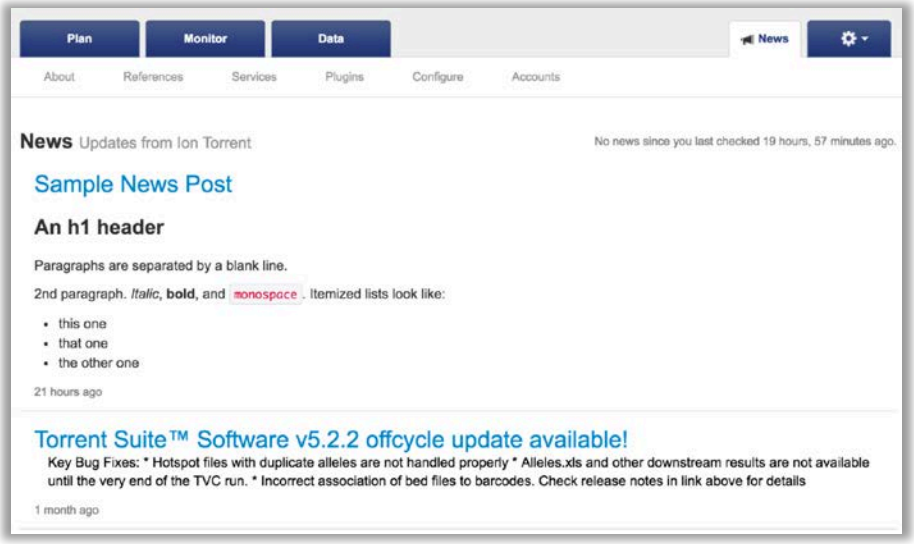
LIMS integration improvement

If you integrate the Torrent Suite™ Software (TSS) with LIMS, you will have an improved CSV upload experience that includes the ability to download column-based plan CSV templates for editing and uploading.



Improved newsfeed

The newsfeed section can now accommodate more in-depth release notes/features for new releases as well as provide updates on new features being added off-cycle. Note: users will not see this new feature until they upgrade to TSS 5.4.



Variant Caller Plugin improvements

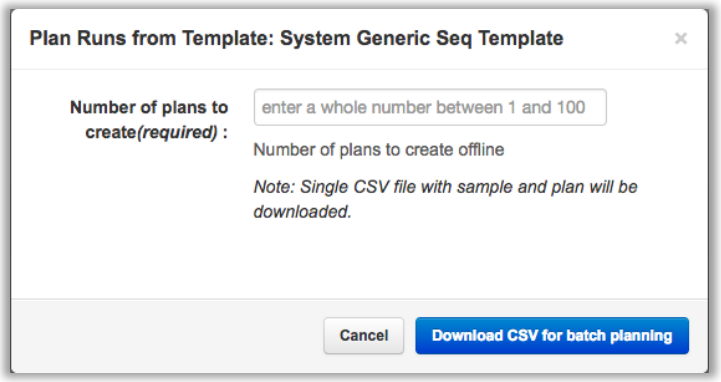
A completely reengineered variant caller plugin is being rolled out in this 5.4 version, including subset variant detection, smart candidate generation, and reporting of possible polyploidy alleles.

New Application categories

TSS 5.4 introduces 6 new application categories to better categorize run templates.

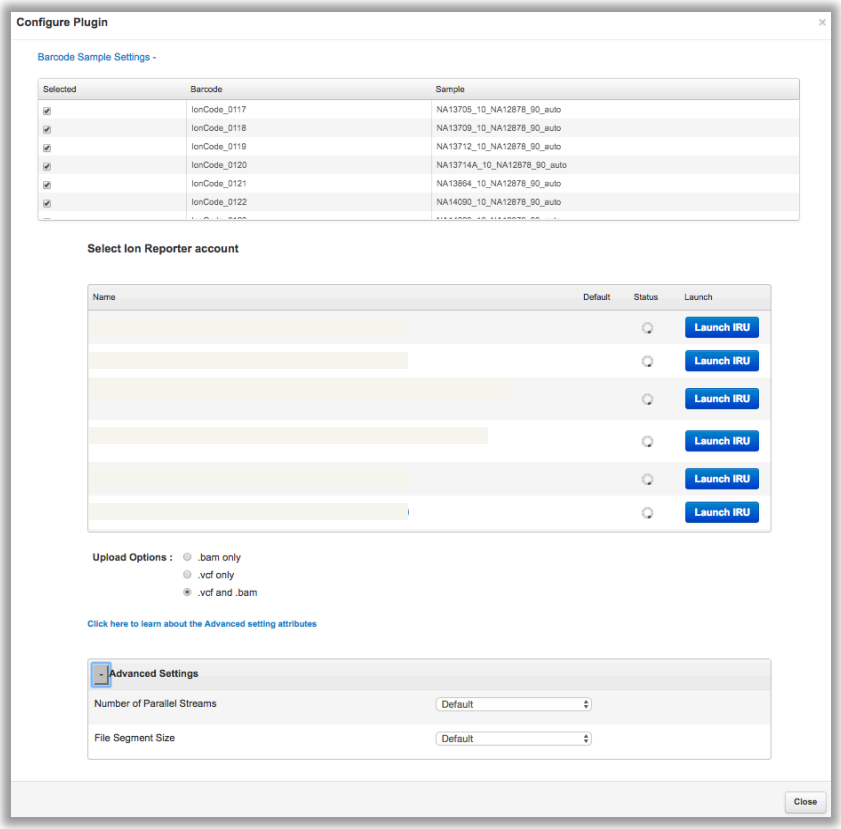
CSV plan upload improvement

TSS 5.4 introduces a new UI for CSV plan upload function. You can now provide the number of plans you want to create in the prompted pop up and it will create a column-based CSV file. TSS 5.4 provides CSV files in column based form only. Note: TSS 5.4 still supports row-based description in the CSV file.



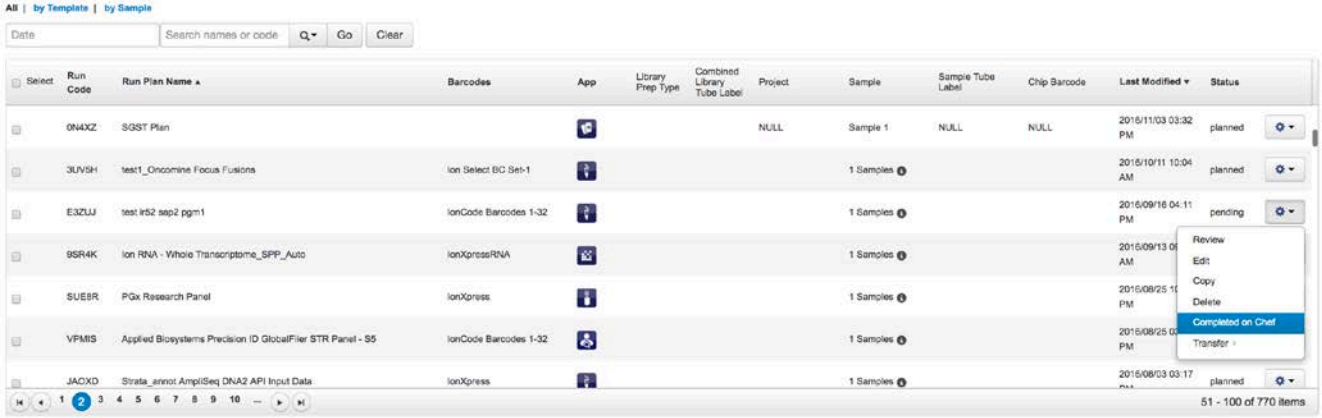
Ion Reporter™ Uploader allows barcode selection

An improvement to the Ion Reporter™ Uploader plugin now allows you to select specific barcodes to upload to your Ion Reporter™ account. This functionality is available for the manual launch of the plugin.



Edit status of Ion Chef™ plan for sequencer

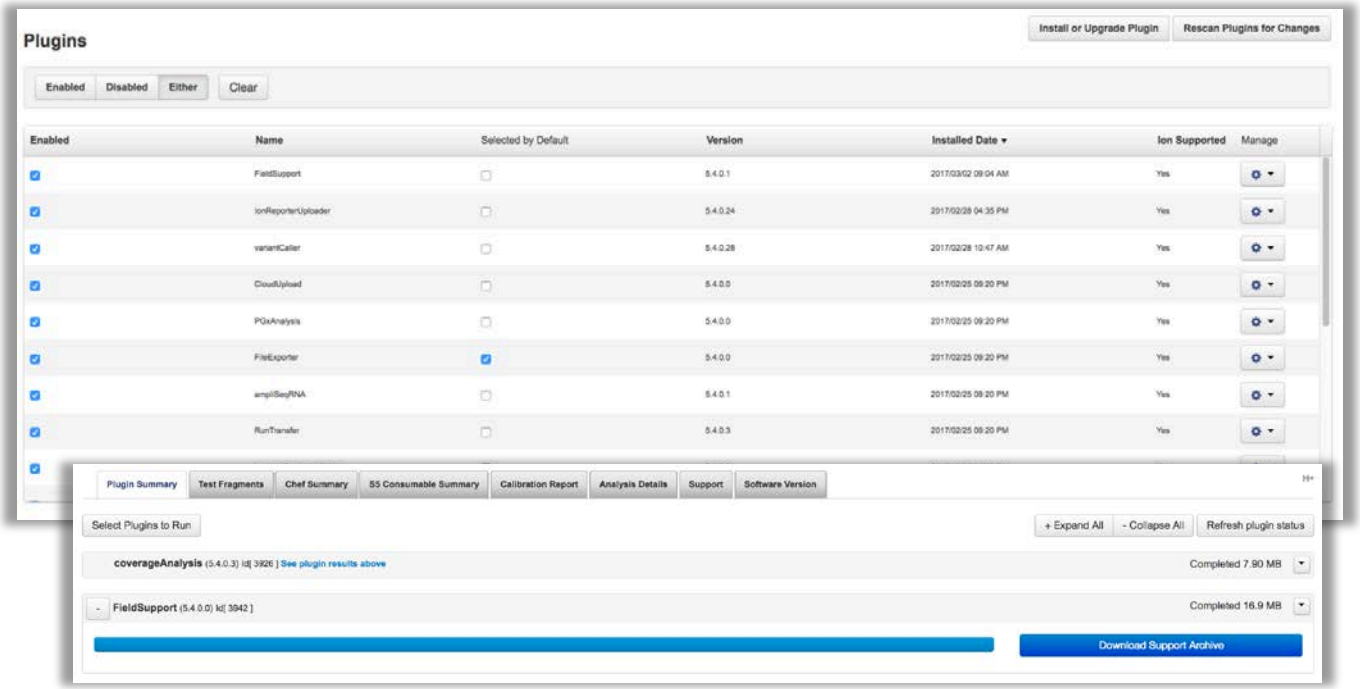
You can now edit the status of an Ion Chef™ template-specific Planned Runs when the Planned Run status change doesn't register due to connectivity issues between the Ion Chef™ and TSS. This option to edit the Planned Run will become visible (on the Planned Runs page) when the status is in "pending" mode. "Completed on Chef" can be selected after the Ion Chef™ run completes if the status doesn't automatically change to "planned". This is a temporary workaround to be used only when facing connectivity problems.



Field support plugin

TSS 5.4 comes with a new field support plugin. The FieldSupport plugin is used for technical support purposes only. Enable and run this plugin only under the guidance of Thermo Fisher

Scientific Technical Support. The Support Archive generated by the plugin provides some files in addition to the content of the Customer Support Archive, which is also still available.



Bug fixes

Run Transfer plugin

Resolved bugs associated with the Run Transfer plugin.

Formatting issues in summary report

Resolved formatting issues in the summary PDF report.

Known Issues

Issue with variantCaller plugin for TagSeq runs on Ion Proton

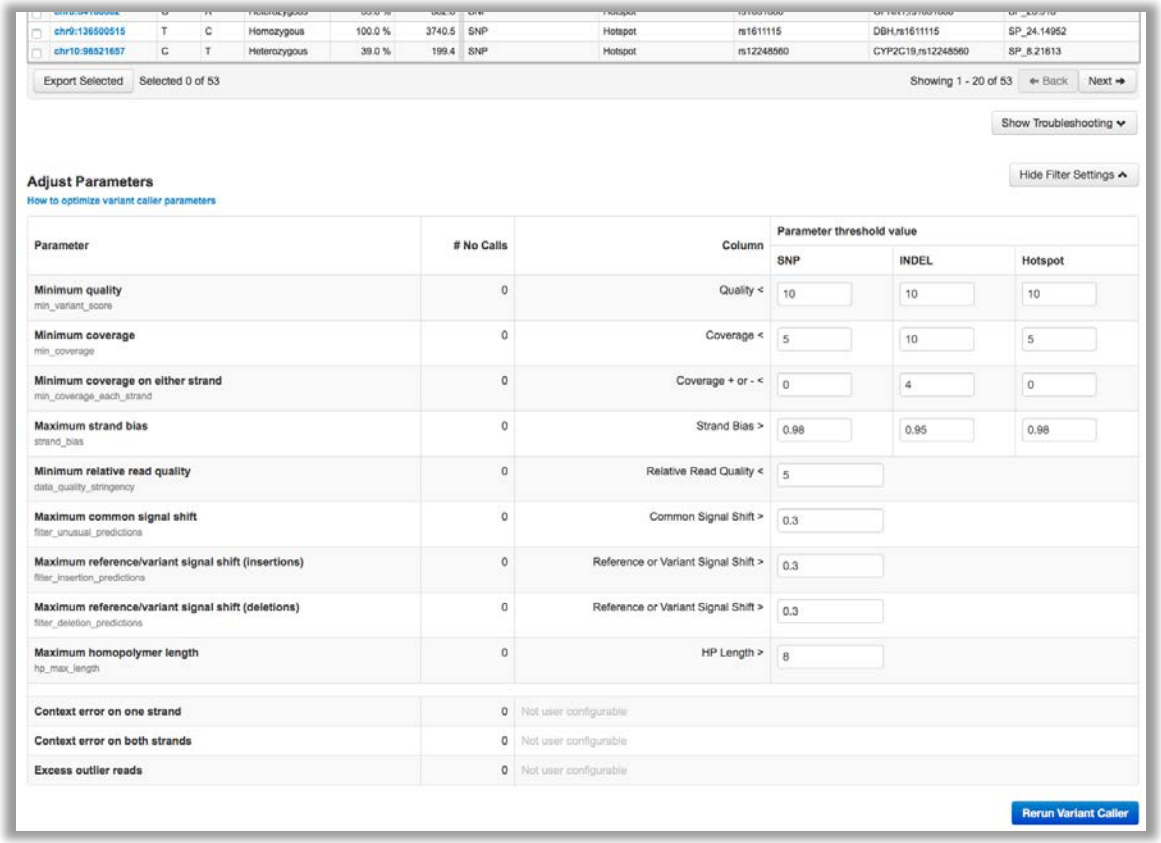
When running a cfDNA run on an Ion Proton, if TVC was included in the run plan it will finish correctly. However, starting another TVC run manually on the completed run leads to an empty TVC input GUI. The bug fix will be provided in an upcoming release.

Issue with variantCaller plugin dropdown menu

On certain versions of Firefox browser, during run plan, the TVC plugin configure page fails to render options in the dropdown menu for "Chip Type", "Library Type" and "Variant Frequency". The workaround currently is to use Safari or Google Chrome browser. The bug fix will be provided in an upcoming release.

Rerunning Torrent variantCaller (TVC) plugin

There is an issue with the Rerun functionality in the variantCaller plugin. This issue may occur if the plugin is rerun from the Variant Caller report. The plugin may not use the same Reference, Target, or Hotspot (HS) parameters for all barcodes. This will be fixed in an upcoming release.



Issue with variantCaller plugin "--bin-dir" option

When running TVC command line from the results/plugins/variantCaller/bin dir (TS server), the system default TVC will be used if no "--bin-dir" is specified. Currently, the help message is not updated to suggest the same. This bug does not affect the TVC standalone version, it only affect users calling variant_caller_pipeline.py from the above dir.

Output column sorting on Completed Run & Reports page

Sorting for "Output" column on the Completed Runs & Reports page has a bug that prevents size based sorting This is because the sorting is based on the most recent run report but that may not be shown in the output column. The bug fix will be provided in an upcoming release.

Scanning 2D barcode for Library/Sequencing/Template kit in run plan

There is a bug that causes the scanning of 2D barcode for "Library Kit Type", "Sequencing Kit", or "Template Kit" to always result in the first entry selected on the list. The workaround is to select the appropriate kit manually from the dropdown list in the Planned Run.

Permission issue with Ion Mesh page

There is currently a bug that causes infinite redirects when you land on the Ion Mesh page without admin privileges. Note: to edit the Ion Mesh configuration, you need to be logged in as an admin user. The bug fix will be provided in an upcoming release.

Issue with auto-discovery of static IP addresses

Currently the static IPs are unable to auto detect other nodes when configuring Ion Mesh, users will need to manually add IP addresses in this case. The bug fix will be provided in an upcoming release.

Issue with sample nucleotide type value

If user changes the target technique of a barcoded plan that has been sequenced, changing the target technique from DNA type to RNA type or vice versa results in the metadata of the barcoded samples not resetting correctly. The affected fields are detailed below:

Target techniques of DNA type: AmpliSeq DNA, AmpliSeq Exome, Other, Target Seq, Whole Genome, Tag Sequencing,16S Targeted Sequencing

Target techniques of RNA type: AmpliSeq RNA, RNA Sequencing

Workaround:Do not change the target technique from DNA type to RNA type or vice versa of a barcoded plan that has been sequenced. Otherwise, IR workflows compatible with the plan will not be shown properly and downstream processes that rely on this metadata will not proceed correctly.

Issue with software update check

This issue only affects users that have a large drive mounted into the TS /media folder, in that case they will not be able to see the "Updates Available" banner message.
Workaround: If there is a new TS software version available and users want to update to the new version then they will need to go to /admin/update/ page directly and click on "Update Server" even if no software updates are shown as Available.

Chrome issue with loading page

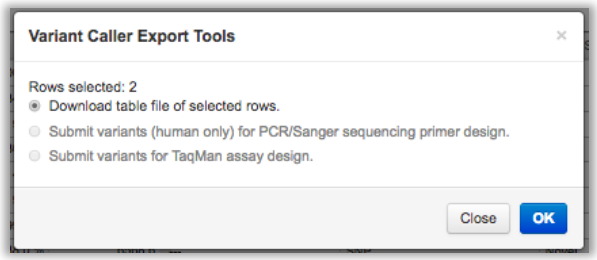
During internal performance testing, we observed that with Chrome web browser, for a TS instance with over 60,000 samples, the “Completed Runs & Report” page failed to load when you clicked on the “More/Less Filters” button. The workaround is to use Firefox.

Avoiding false positive hotspot calls

When customizing the TVC parameter files and using a hotspot file, we recommend that the freebayes section parameter "gen_min_allele_freq" be no greater than the "hotspot_min_allele_freq." Otherwise false positive hotspot calls may occur if the hotspot allele has a sequence of homopolymers that matches a true variant that comprises a similar pattern of homopolymers (e.g., ATC is similar to ATCC).

Ordering Taqman/Sanger primers from TVC output

In TVC 5.4, the option to order TaqMan®/Sanger primers has been greyed out. The workaround is to manually enter the coordinates into Primer Designer™ or TaqMan® tool to order primers. Note: the tools may have different version of the human genome in use.



Variants filtered by Strand Specific Error (SSE)

In TVC 5.4 any variant filtered by SSE as identified in a hotspot file will appear in the output directory in a file named "black_listed.vcf". This file is planned to be removed in a future release of TVC where the entries will instead appear in "small_variants_filtered.vcf".

HP-DEL is classified incorrectly by TVC evaluator

The indel_as_hpindel parameter controls whether SNP filtering parameters should be applied to non-homopolymer (HP) indels (when disabled, or set to 0) rather than indel filtering parameters. In prior releases to TSS 5.4 indel classification as HP-indel or non-HP indel had a bug where some HP-indel deletions were incorrectly characterized as non-HP indels. This bug is fixed in TSS 5.4 but it affects filtering of affected indels when indel_as_hpindel is disabled.

indel_as_hpindel is enabled by default in Ion 540™/Ion Proton™ germline parameter files and indel filtering is applied to all indels, so this fix will not affect the generic version of this panel. It will also not affect any other panel where this parameter is enabled (e.g., AmpliseqExome).

In all other generic panels indel_as_hpindel is disabled by default and as indel filtering is more stringent than SNP filtering we expect a possible improvement in sensitivity with a possible increase in false positives. However, in testing somatic panels toggling indel_as_hpindel has no effect on indel calling.

A change is seen in Ion 520™/Ion 530™ or Ion 318™ chips that have indel_as_hpindel disabled by default with germline calling. The indel False Positive rate increases and is offset by an increase in sensitivity. Panels that use this parameter in indel germline calling may be affected. A full return to pre-TSS 5.4 behavior is not possible without adjusting indel filtering parameters. Guidance would be to adjust parameters for indel calling to be more stringent.

Submitting username and password to an unencrypted site

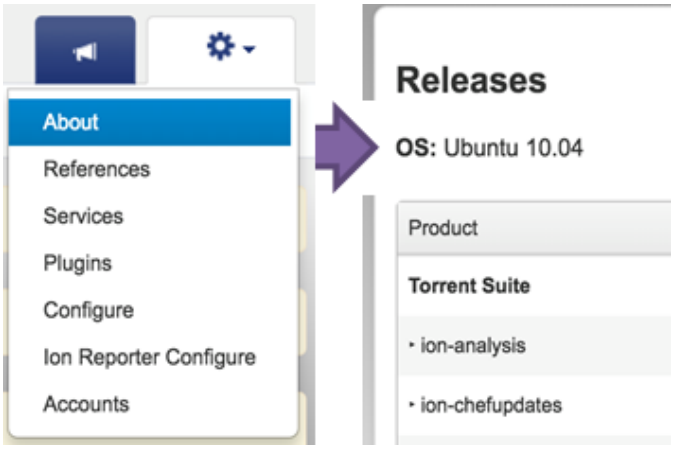
When submitting a username and password to an unencrypted site, Chrome now warns the user with the "Not Secure" banner. This is because other users on the same network as the browser can read the username and password in transit.

Note: we do not perform security/penetration testing. Users are requested to ensure there are no malicious devices/users on their networks.

IMPORTANT! You cannot roll back to a previous version of Torrent Suite™ Software and Ion Torrent™ instrument software after you perform the upgrade described in this document. When updating TSS, it is critical that you update both the software on the instrument and the software on the Torrent Server. Beginning with Torrent Suite™ Software 4.0, the instrument will not retrieve the proper on-instrument analysis if both systems are not updated.

System Requirements

Torrent Suite™ Software (TSS 5.4) and all further updates and software releases require the Ubuntu™ 14.04 Operating System (OS). A Torrent Server running Ubuntu™ 10.04 is only able to update to Torrent Suite™ Software 5.0.5. To see the version of OS installed on your Torrent Server, navigate to the "About" tab in the Torrent Browser and refer to the "OS" section.



Visit: https://www.thermofisher.com/order/catalog/product/4476610 to learn more about how to upgrade the operating system on your server. Ubuntu security updates (through May 30, 2017) will be auto-installed as part of TSS 5.4 upgrade. For more information visit: https://www.ubuntu.com/usn/trusty/."

If you are using the Ion Chef™ Instrument

As of Torrent Suite™ Software 4.4, the Ion Chef™ Instrument only sees one Torrent Server™ connection. This change does not affect instruments that are directly connected to one server. That connection remains unchanged. However, if the Ion Chef™ Instrument is configured to see more than one Torrent Server™ connection, follow the guidelines in the Ion Chef™ and Torrent Server™ Network Setup User Guide (Pub. No. MAN0013444) (https://www.thermofisher.com/order/catalog/product/4484177) to verify that the configuration meets your needs. From the primary Torrent Server™, you can

enable Planned Run sharing to bring additional Torrent Server connections online. All Ion Chef™ Instrument logs remain on that primary server.

Install the Torrent Suite™ Software 5.4 Update

IMPORTANT! During this upgrade, you must use the same user account for both Torrent Server™ and the Ion instruments (Ion PGM™ Instrument, Ion Chef™ Instrument, Ion Proton™ Sequencer, and Ion S5™ and S5™XL Sequencers.)

Use these steps to install Torrent Suite™ Software 5.4:

1. Log in to the Torrent Browser as **ionadmin** user.
2. Click Settings (⚙) > **Services**. Ensure that there are no active jobs running.
3. Click Settings (⚙) > **Configure** > **Admin Interface**.
4. Click **Update Server**.
5. Click **Check** to check for updates.
6. When the **Available** message appears, click **Update Server** to start the update process.
7. When finished, ensure that the "**Upgrade completed successfully!**" message appears.

Updates through the command line

Note: This procedure is typically performed by Thermo Fisher field service engineers. Most users will instead use the procedure above for updates through the Torrent Browser.

New in this release, for Ubuntu™ 14.04 systems, the command-line update procedure has an additional TSconfig step of TSconfig --configure-server. The complete command-line update procedure is:

1 sudo apt-get update
2 sudo apt-get install ion-tsconfig
3 sudo TSconfig -s
4 sudo TSconfig --configure-server

Verify the software update on the Torrent Server™

To verify that the server is running Torrent Suite™ Software 5.4, click **Settings** (⚙) **> About** in the Torrent Browser and review the version number.

Update the instrument software

Update the software on any Ion instruments in use:

- Ion Proton™ Sequencer
- Ion S5™ and S5™ XL Sequencer
- Ion Chef™ Instrument
- Ion OneTouch™ 2 Instrument

Appendix: Torrent Suite™ Software 5.4 Release Notes

Release Summary

Release Date	15 June 2017
Release Version	**5.4**

Software Version

These tables list the versions for each of the latest software packages for Torrent Suite™ Software plugins and Ion Torrent™ instruments.

Torrent Suite™ Software

Packages	Version
ion-analysis	**5.4.11**
ion-dbreports	**5.4.31**
ion-gpu	5.4.0

Packages	Version
ion-pipeline	**5.4.9**
ion-plugins	**5.4.21**
ion-publishers	5.4.1
ion-rsmts	5.4.0
ion-sampledata	1.2.0
ion-torrentpy	**5.4.10**
ion-torrentr	**5.4.10**
ion-tsconfig	**5.4.3**

Plugins	Version
ion-plugin-ampliseqrna	5.4.0.1
ion-plugin-assemblerspades	5.4.0.0
ion-plugin-coverageanalysis	5.4.0.5
ion-plugin-dataexport	5.4.0.1
ion-plugin-erccanalysis	5.4.0.0
ion-plugin-fieldsupport	5.4.0.3
ion-plugin-fileexporter	5.4.0.0
ion-plugin-filterduplicates	5.4.0.0
ion-plugin-immuneresponserna	5.4.0.0
ion-plugin-ionreporteruploader	5.4.0.28
ion-plugin-pgxanalysis	5.4.0.1
ion-plugin-rnaseqanalysis	5.4.0.1
ion-plugin-runtransfer	5.4.0.7
ion-plugin-sampleid	5.4.0.0
ion-plugin-variantcaller	**5.4.0.46**

Ion Chef™ Instrument Control Software

Update Package	Version
ion-chefupdates	5.4.2

Package	Version
GUI	070022
IS	517
SC	515
GM	23
OS	59
TsLink	3.3.9

Ion Proton™ Instrument Control Software

Update Package	Version
ion-protonupdates	5.4.1

Package	Version
Datacollect	3510
Graphics	88
LiveView	2303
OIA	5404
OS	33
rsmagent	29
Scripts	2.1.41

Ion S5™ and Ion S5XL™ Instrument Control Software

Update Package	Version
ion-s5updates	5.4.2

Package	Version
RaptorScripts	128
RsmAgent	29
RfidMgr	28
ReaderFpga	10b
OS	29
OIA	5404
LiveView	2303
Graphics	88
DataCollect	3510

Ion PGM™ Control Software

Update Package	Version
ion-pgmupdates	5.2.1

Package	Version
LiveView	649
DataCollect	488
HW8560	134
Scripts	220000
OS	21
Graphics	36
TSLink	1.0.4

Ion OneTouch™ 2 Control Software

Update Package	Version
ion-onetouchupdater	5.0.2

No change since TSS 5.0.2

Package	Version
OneTouch	803
BoardControl	800
UpdateAgent	800
Scripts	802
Psplash	800

Revision History

Revision	Date	Description
B.0	21 June 2017	Addition of support for new features: • Ion 510 chip • Ion Reproseq PGS kits to run on the Ion S5 system
A.0	9 June 2017	New release notes for the Torrent Suite™ Software 5.4 that document the enhancements, known issues, and bug fixes included in version 5.4 of the software.

For support visit thermofisher.com/support or email techsupport@lifetech.com

21 June 2017