

UNICORN™

Software Change Description

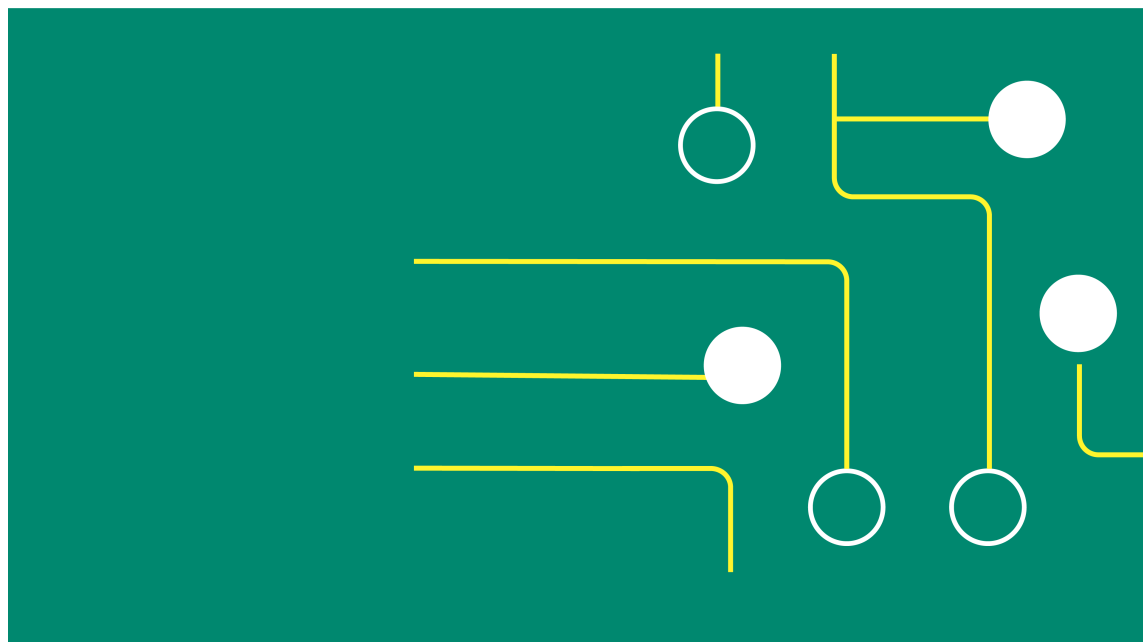


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1 Introduction

This document describes the major implemented changes and improvements in UNICORN™ system control software since UNICORN 6.2.

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1.1	Recommendation for users of UNICORN 7.9 and later versions	4

Operating systems and UNICORN database version

For information about compatibility between UNICORN software versions and the supported operating systems and database versions see the *UNICORN Compatibility matrix* at:

<http://www.cytiva.com/UNICORNcompatibility>

1.1 Recommendation for users of UNICORN 7.9 and later versions

Do not upgrade ICs with UNICORN 7.9.

For details on how to handle methods that have been created and/or edited in UNICORN 7.9, see the *UNICORN 7.9 Method Editor Information Letter*.

2 UNICORN 7.12 vs UNICORN 7.11

Security improvements

- Several security updates have been implemented in this release to address vulnerabilities.
- The password policy rules have been updated. The minimum number of characters is now 10. When upgrading from older UNICORN versions, the old password policy still applies. Any update of the password policy requires a minimum of 10 characters.

Other

- The **Method Queue** dialog has been redesigned.

Corrected defects

Several defects have been corrected in this release. The following are some examples.

Defect ID	CCM	Summary
29544	09661460 09763185 09900979 10101160	It is not possible to paste scouting variables in the Scouting dialog in UNICORN 7.10.
13214	EngaGE 0919470	It is not possible to update personal phases. An updated phase had to be saved with a new name.
20289	00730605	Copying a method does not handle case sensitivity in the same way as the Method Editor . If a method contains two different variables Variable1 and variable1 , these variables will be treated as the same one when copying the method.
15995	00372365	The Data Viewer Tool on UNICORN.iso is not signed.
18559	00607258 00673545	Exported snapshots with retention in Time get the retention value of the Volume instead.
19063 25349	00635148 07325187	The first data point is duplicated and shifts the values on the Y-axis when exporting non-normalized curves in Classic Eval .
17859		When browsing for methods in the System Control module, the Find function is very slow.

Defect ID	CCM	Summary
26411	07608855	A logging in Run log of changes related to Data Collection Settings for curve was logged at the incorrect volume.
19916	00664115	The result could not be saved when the Fractionation event occurred after END had started.
29329	09994677	The UNICORN installer fails to initialize a configuration parameter at a clean install, which may cause connection issues between the client and the instrument server.
19628	00651327	The baseline calculation performed via evaluation procedures returns incorrect values for negative peaks.
22340	05627092	A method fails to execute a Watch instruction when the action parameter is set to End Block instead of End block .
21538	00825402	When scouting on columns with different diameters, the linear flow rate was not calculated correctly.
22196	0545300	The column packing wizard for ÄKTA process™ shows the incorrect packing factor even if the correct value is used in the method.
23184	06445044	Removing scouting runs in the Start Protocol breaks the scouting. Removing scouting runs in the Start Protocol can cause the method to be run with the variables from the last scouting run removed. All other scouting runs are ignored. Similar to defect 29104.
29104	09637086	An issue occurs when editing variables, including removing scout runs, in the Start Protocol when starting a method. The incorrect variable value is executed.
28810	09406853	Error in the Start Protocol when changing a variable value. Related to defects 29104 and 23184.
29221		Passwords must be, at least, ten characters in length.
28573	08998044	Unable to save results using custom-defined column types.
29207	09729155	UNICORN fails to save a complete result when the database connection is lost during a run.
29303		The Snapshot table in Report Template could be improved. There is now one Snapshot table per snapshot instead of one table per data curve.
29304	09841269	Snapshots were only available for the first chromatogram in Report Template . All snapshots are now included.

Defect ID	CCM	Summary
28598	09177013	The log entry is attributed to the incorrect user when a run is ended. It was logged that the user who started the run was the one who ended the run, even if it was the system itself or the user currently controlling the system.
22066	01301879	Column types with the same name but a different letter case can be mixed-up.
22186	00868739	Run Data in the unit CV shows zero when not using the Column Logbook .
25857	07543349	Peak table values may change in its last decimal when changing to another base and switching back.
26935	07900563	Printing the method result does not show the name of unused blocks.
28945	09453075	The New User Name text box accepts characters that can cause internal errors.
28993	09540593	UNICORN and the System Control module intermittently get an internal error during connect and disconnect.
29141	09661460	The arrow keys do not work as intended in the Method Editor .
22347	05582945	BasicCurveControlHandler is not thread-safe, it is used by multiple threads simultaneously.

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2.1 Verification of installation or upgrade

Follow the steps below to verify the installation or upgrade of the UNICORN software.

Note: *If you are using SQL scripts to install or upgrade a central database, make sure that no errors are shown when running the scripts.*

Perform integrity check

Step	Action
1	Start UNICORN and make sure that the Administration module is started.
2	Click Reports → Perform Integrity Check...
3	Verify that the status is OK for all parts.

Verify version

Step	Action
1	Start UNICORN Service Tool.
2	In the Installation tab, verify that the UNICORN software and database version numbers match the table below.

UNICORN version	Version numbers	
	UNICORN software	UNICORN database
7.12	7.12.0.2623	1.8.7

3 UNICORN 7.11 vs UNICORN 7.10

New features

- Possibility to display a reference curve in real time during the run of a method in **System Control**. The reference curves can be defined in the method or selected when starting the run.
- Support for SQL Server 2022.
- Possibility to use Active Directory accounts for database access.

Security improvements

- The UNICORN installation folder `C:\Program Files (x86)\Cytiva\` has been restored to standard Program Files access restrictions. Database files, reports and Instrument Configurations are now stored in `C:\ProgramData\Cytiva\`.
- The default password policy has been updated.
- The latest security patches for SQL Server and for .NET are included.
- UNICORN is to be started as a Windows Administrator to access certain database functionalities such as **Edit Backup Schedule** and **Restore** backup data.
- The UNICORN Privacy and Security Manual has been updated regarding firewall rules.

Other

Backups and archives made before the upgrade from UNICORN 7.6 - 7.10 to UNICORN 7.11 must be manually moved from the **Program Files (x86)** folder to the **ProgramData** folder.

Below are examples of the default locations for backups and archives of a standard UNICORN installation.

- Location in UNICORN 7.6 to 7.10:
 - `C:\Program Files (x86)\Cytiva\UNICORN\UNICORN Database\Backup`
 - `C:\Program Files (x86)\Cytiva\UNICORN\UNICORN Database\Archive`
- Location in UNICORN 7.11 and later:
 - `C:\ProgramData\Cytiva\UNICORN Database\Backup`
 - `C:\ProgramData\Cytiva\UNICORN Database\Archive`

Corrected defects

Several defects have been corrected in this release. The following are some examples.

Defect ID	CCM	Summary
28149	08889191	After the upgrade from SQL Express to SQL Standard, Database Management tools, such as Archive , Retrieve , Backup , and Restore were not accessible
27292	07990016	During a run, users want to see an old run as reference curve
1925		Any result in the Manual run folder was deleted when more than ten results were present. Now, this only applies to results named <code>ManualRunxxx</code>
13491		A description on how manual runs are handled in the Manual run folder is missing in the UNICORN manuals
13114	00814106	The instrument is to handle corrupt runtime backup files
22848		The new signature password is not validated against the password policy
28599	9160850	The UV Curve and the Run Data names return to the default names after a restart of the instrument server when running with RTU
26447	6901674	Not possible to connect to CU-960-based systems after a power recycle operation of CU-960
27789		UNICORN generates report files to <code>C : \temp</code>
27025	07913785	Result backup files are deleted when a recovery operation fails
28452	09000983	Hold Until does not work with UNICORN methods in CU-960
27487	08041628	Graphical artifacts in the new Evaluation report
27311	07987799	Unable to view signatures in a signed method after upgrading UNICORN
27353	07955507	Slow performance when opening the Evaluation module and when opening and closing results
27945	08686051	Possibility to copy a password from LogonDialog in UNICORN 7.7 and later versions
27022	07924790	The Minimize and Maximize buttons are missing in the Customize Report: Chart window in Evaluation Classic
16672		When setting passwords in a dialog box, it is not possible to set the Log on password and the Signature password to the same password
27650		Error when trying to delete a folder in Evaluation

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3.1 Verification of installation or upgrade

Follow the steps below to verify the installation or upgrade of the UNICORN software.

Note: *If you are using SQL scripts to install or upgrade a central database, make sure that no errors are shown when running the scripts.*

Perform integrity check

Step	Action
1	Start UNICORN and make sure that the Administration module is started.
2	Click Reports → Perform Integrity Check...
3	Verify that the status is OK for all parts.

Verify version

Step	Action
1	Start UNICORN Service Tool.
2	In the Installation tab, verify that the UNICORN software and database version numbers match the table below.

UNICORN version	Version numbers	
	UNICORN software	UNICORN database
7.11	7.11.0.1097	1.8.6.0

4 UNICORN 7.10 vs UNICORN 7.9

New features

The following functionalities are added in the **Run log** pane in **Evaluation** to support troubleshooting:

- Filter options
- Mark the selected **Run log** event in the chromatogram

Security improvements

- Latest security patches for .NET included.
- Latest security patches for SQL Server included

Corrected defects

Several defects have been corrected in this release. The following are some examples.

Table 4.1:

Defect ID	CCM	Summary
22345	05631176	Internal error when trying to delete questions in ÄKTAreedy method start protocol
23144	06425963	Error appears when performing NWF analysis if the result name contains comma.
25122	07257074	The user documentation is updated with information about different types of UNICORN files
25454		License not released after logout and cannot be used by other users as a result
26358	07742424	Internal error when attempting to print from run documentation from manual runs performed on ÄKTA oligo-synt
26362	07743557	Clarify in the user manual that new licences are needed when upgrading from UNICORN 7.6 and earlier versions to UNICORN 7.7 and later versions
26670	07776727	Results cannot be exported if the chromatogram names contain these characters * ? / \ : < > ' ; , "
27423	08020589	Import of old method gets text edited phases if the IC has been upgraded
27427	07955507	Evaluation module is very slow to open and results also slow to open and close

Defect ID	CCM	Summary
27378		Change of outlet in Column CIP does not take effect
17498		The database integrity fails if the customer has any other users than the UNICORN user in the SQL Server
21222		Restricted mode (when connection to database is lost) allows opening restricted UNICORN modules
25752		Unused section contains used blocks making it easier to delete active blocks by mistake
26835		Failure to restore some old database backups
27628		Failure to retrieve data archived prior to UNICORN 7.8

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4.1 Verification of installation or upgrade

Follow the steps below to verify the installation or upgrade of the UNICORN software.

Note: *If you are using SQL scripts to install or upgrade a central database, make sure that no errors are shown when running the scripts.*

Perform integrity check

Step	Action
1	Start UNICORN and make sure that the Administration module is started.
2	Click Reports → Perform Integrity Check...
3	Verify that the status is OK for all parts.

Verify version

Step	Action
1	Start UNICORN Service Tool.
2	In the Installation tab, verify that the UNICORN software and database version numbers match the table below.

UNICORN version	Version numbers	
	UNICORN software	UNICORN database
7.10	7.10.0.2682	1.8.5.0

5 UNICORN 7.9 vs UNICORN 7.8

New features

- Cloud database: allows users to run their UNICORN database in their own cloud infrastructure. It is a general solution and has been tested on Azure Managed Instance, Azure SQL DB and AWS RDS SQL Server.
- Possibility to access and download UNICORN extensions from Cytiva Marketplace. UNICORN software can integrate with Cytiva Marketplace (desktop version).
- Support for update and renewal of certificates for My Instruments and UNICORN online from the UNICORN Service Tool.
- Possibility to display **Run log** together with chart in **Evaluation**.
- Possibility to delete multiple blocks in the **Method Editor**.
- The OPC classic is not embedded in the software. A separate UNICORN OPC Server is available for purchase if OPC functionalities are needed.
- UNICORN software now supports Windows 11 Pro and Enterprise.

Security updates

- Improved security in data transfer.

For more information security updates, see *UNICORN Privacy and Security Manual*.

6 UNICORN 7.8 vs UNICORN 7.7

New features

- **Support for ÄKTA oligosynt™ oligonucleotide synthesizer.**
 - Target sequence available from method creation to evaluation.
 - Online integration of detritylation peaks during run, providing estimated coupling efficiency.
- **Automatic generation of PDF reports at the end of a run.** These PDF reports are stored in C:\Program Files (x86)\Cytiva\UNICORN\UNICORN 7.8\Documentation\Report.

Corrected defects

Several defects have been corrected in this release. The following are some examples:

Defect ID	CCM	Summary
22461	05732400	Not possible to loop snapshot instruction
23357	06255384	Run.log file filled with "WARN InstrumentServerAdapter: Update system time zone failed"
23655	06592856	Ambiguous information in the manual regarding network printer setup for instrument server
23726		In Evaluation , add the option of using the left/right arrows on the keyboard to pan the zoomed chromatogram with more precise control
24100	06932082	Method Queue start time cannot be set lower than current time even if date is in the future

7 UNICORN 7.7 vs UNICORN 7.6

New features

- Command-line installation now allows IT organization to package the installation and send it out for new installation or upgrade.
- Possibility to set 4 y-axis in **Evaluation**
- Possibility to define customized report templates for printing, for example, layout of chart, header and footer content
- Possibility to print documentation information together with chart and tables in **Evaluation**

Security improvements

When installing UNICORN database

- Encrypted database communication is enabled by default
- Latest available SQL patches are installed

Note: When upgrading a UNICORN database, old settings remain.

Other

UNICORN 7.7 supports Trending Tool 2.0.

Corrected defects

Several defects have been corrected in this release. The following are some examples

Defect ID	CCM	Summary
22297	05475770	Login without having to use a password after auto log off
22169	05391025	System Setting forgotten by UNICORN software
21485	00820301	Release Object in DB Management cause Last Modified data change
21844	Part of 00832576	Print of Evaluation log in documentation print is missing dates for UNICORN 5 results
22311	05597875	CV/h not calculated if Column Logbook is not enabled
22042	01313856	Archiving results during an ongoing run can end up with lost results
22503	05817790	Unable to save phases based on the User Defined phase
21571		Users in LDAP sub groups not allowed to check in to UNICORN software
23464		Automatic email notification for alarm and warning not working when encryption is enabled

8 UNICORN 7.6 vs UNICORN 7.5

New features

- Support for ÄKTA go™ Frac **F9-T**.
- Possibility to **Align at phase start** in **Evaluation**. The x-axis will be aligned to the start point of the selected phase. This allows comparison of results with, for example, different sample volume.
- Possibility to replace outdated root certificates via the UNICORN Service Tool
- User interface is updated for Cytiva.
- Web browser based contextual help.

Security improvement

UNICORN 7.6 will patch RTU:s with latest security patches.

Performance

Database communication for example, import of Instrument Configuration to long distance database, is improved.

Corrected defects

Several defects have been corrected in this release. The following are some examples:

Defect ID	Case ID	Description
13432	EngaGE 00981276	Cannot create report for result where a variable exists in many blocks.
14705	CSSx 245453	When OPC was connected an unknown error occurred when saving result at the end of run
17748	00540405	Method queue stopped before it was completed, due to new user not having access to folder.
17888	05452560	When connected to several systems in system control and using keyboard to tab between systems, pressing END may end the incorrect system.
19183	00637600	User should not be able to rename locked methods and results.
19189	00636051	UNICORN software logs says method changed when method is signed
19503	00643546	System name cannot end with a space.
19513	00636051	UNICORN software logs were not capturing all Window authentication attempts

Defect ID	Case ID	Description
19515	00636051	Time zone discrepancy in Integrity report for negative zones, say -4 in one section and +4 in another.
19618	00650967	Runtime backup first entry is logged repeatedly when instrument server is started.
19668	00654148	"Control message" hidden behind "Alarm-message" .
19683	00635344	System time zone not displayed
19865	00661934	Answers to Questions for imported UNICORN 5.x results may not be shown.
20290	00670235	Change of result name in start protocol not saved in special scenario (Browse followed by Cancel) .
20574 20575	00728105	CU960 memory error at data recovery.
20639	00748634	No other extension than ExtensionAPI 2.0 can be used together with UNICORN 5 Import extension.
21525	Not available	Unable to restore UNICORN 6 database.
20257	Not available	UNICORN 7.5 upgrade installation scenario does not install the certificates for UNICORN online.
20353	00733229	Possible to start run even if creation of data backup fails.

9 UNICORN 7.5 vs UNICORN 7.4

New features

- Possibility to measure distance and signal fluctuations between two points in a curve has been added in Evaluation.
- Possibility to select which database to log on to when starting UNICORN software.
- Improved possibility to select user and password for database communication in enterprise installations.
- New access rights for Rename and Edit operations.
- Support for setting up a scouting with multiple runs with the same running conditions.
- Compatibility with new version of SQL Server express 2017.

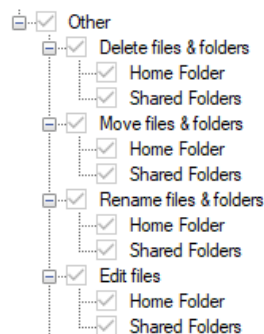
Security improvements

- Critical vulnerability in e-License server is addressed.
- Possibility to encrypt OPC communication provided.
- Improved possibility to select user and password for database communication in enterprise installations.
- Improved encryption of password available.

See *UNICORN 7.5 Privacy and Security Manual* for detail information on security improvements.

Access rights improvements

- Possibility to provide access rights for Move and Delete operations independently.
- Access rights for Rename and Edit operations added.



- Column protection mode has been moved from User Setting to Access Rights. This allows the administrator to decide whether this function to be enabled or not.



IMPORTANT

Previous settings for column protection mode will be disabled when you upgrade to UNICORN 7.5. The settings can be enabled again in Access Rights.

Other improvements

- Performance of the Method Editor has been improved.
- CU-9x0 watch peak max function algorithm has been improved to avoid triggering by early fluctuations in the run. However, it is still possible to configure CU-9x0 to use the previous algorithm.
- Data viewer tool has been updated to support Windows 10 and printing of PDF of log files in batches.

Corrected defects

Several defects have been corrected in this release. The following are some examples:

Reference no.	Description
ALM: 17453 CCM: 00546585	Not possible to import method from UNICORN 5 to UNICORN 7 when the method contains unused blocks with messages with two commas.
ALM: 17831 CCM: 00559076	Data points function in Evaluation shows incorrect values when moved outside the curve range
ALM: 17865 CCM: 00570213	Changing drop-down list variables in start protocol does not take effect in run.
ALM: 18092 CCM: 00578910	System out of memory exception during import of large UNICORN 5 res-file.
ALM: 18473	Links between DoE factors and Method variables lost.
ALM: 18662 CCM: 00620147	ÄKTAcrossflow™ results generated in UNICORN 5.31 cannot be opened in Evaluation .
ALM: 18770 CCM: 00624030	In the peak table header in Evaluation, the incorrect unit is displayed for extinction coefficient.
ALM: 19187 CCM: 00636051	UNICORN software does not log failed signing with Windows users.

Reference no.	Description
ALM: 19190 CCM: 00636051	Time zone discrepancy for negative time zones in Integrity report, e.g. -4 and +4 in different sections, when -4 is correct.

Limitations

- New database version is not compatible with previous versions.
- UNICORN 7.5 is not verified with Windows 7.

10 UNICORN 7.4 vs UNICORN 7.3

Updated user interface

All major modules of UNICORN 7.4 are updated with improved user interface to align with Cytiva user interface guidelines.

Simplified installation

It is now possible to install UNICORN software using Windows command-line, see *UNICORN Command-line Installation Guide*. The installation can be done with very limited or without any user interaction.

Security Hardening

- It is now possible to encrypt E-mail communication.
- Some password policy rules are added. For more information, see *UNICORN Privacy and Security Manual*.
- It is now mandatory to change password for **Default** user.
- Third-party component NancyFX is updated because of critical security vulnerability (CVE-2017-9785)

OS Support

- UNICORN software now supports both UK and US English language packages. For more information on language compatibility, see [UNICORN Compatibility Matrix](#).
- UNICORN software now supports Windows 10 Enterprise.

Reduced plate height

Calculation of reduced plate height (h) is added in **Evaluation**. It allows normalization of the HETP values bases on the particle size for the used resin. The reduced plate height can be saved into the column logbook and it is possible to set notifications limits.

Upgraded result version

Result version has been upgraded to display the result of the reduced plate height calculation in the peak table.

Extended handling of nested Watch blocks

The functionality of handling **nested Watch recursion** (sometimes referred to as "infinite loops") is now supported.

A typical use of this functionality is to collect peaks separately without knowing in advance how many peaks are expected.

Corrected defects

Several defects have been corrected in this release. The following are some examples:

Reference no.	Description
ALM: 15768, 15136 CCM: 00317301, 00257162	Handle differences in UPN/group name and SAMaccount name in Active Directory affecting logon as windows user.
ALM: 17678 CCM: 00409889	Retrieving groups from Active Directory not working on Windows 10.
ALM: 16438, 16236 CCM: 00405049, 00395197	When changing user during run the user who started the run is logged as the one who ended it.
ALM: 16695 CCM: 00416615	Incorrect time unit for method base is printed in reports made for ÄKTA process systems. For example, "h" printed instead of "min".
ALM: 11355, 12807 CSSX: 612445061-U260 EngaGE: 417116	Sub-blocks used in multiple blocks are removed if one of the blocks containing the subblock is removed.
ALM: 15481 CCM: 00311626	Open result in new Eval gets locked when automatic log off is performed.
ALM: 11521 CCM: 00376048	UNICORN software client becomes slower and slower when evaluating results and performing actions like apply layout, edit peak table, and save in Evaluation Classic.
ALM: 16186 CCM: 00388149	With Logbook disabled, the user is prompted to choose column individual when changing an ongoing scouting run.
ALM: 16281 CCM: 00391005	Issue with adding scouting runs, in start protocol or during run when scouting on watch action that is set to call a block.
ALM: 16394 CCM: 00399483	Not possible to view scouting variables in results in Evaluation unless instrument server is running.
ALM: 11403	Changing variable values in Start protocol works but changing back to default value does not register.
ALM: 13844 EngaGE: 229589	Not possible to select base, time or volume, for run log and run notes when exporting documentation.
ALM: 18016 CCM: 00576261	Cannot start runs because runtime backup files are not cleared.

Reference no.	Description
ALM: 17892 CCM: 00570977	Integrity check fails for instrument related files (phases) when using several legacy configurations in Method Editor. Defect was introduced in UNICORN 7.2.
	Several issues on, installing UNICORN software, importing Instrument Configuration and connecting to system in Windows 10 are resolved.

Performance improvement

The overall performance of the software has been improved.

11 UNICORN 7.3 vs UNICORN 7.2

Support for ÄKTA pilot 600

Compatibility with the ÄKTA™ pilot 600 system is implemented in UNICORN 7.3.

Column performance workflow in Evaluation

It is now possible to inspect, revise, and calculate column performance values and save them into the column logbook.

Generic method adaptation

For custom packed columns, it is now possible to create generic methods that are adapted for a specific column at the start of a run, taking actual column volume into account.

Increase of decimals

The number of decimals for the run data field **Accumulate volume** and **Accumulated block volume** have been increased to 2.

MSXML version upgrade

From this release, MSXML 6 . 0 is used instead of MSXML 4 . 0 for better cyber security. If there is any MSXML 4 . 0 installed in the PC, it is recommended to remove it if no other application is using it.

Improvement

The overall quality of the software has been improved by correcting several defects.

12 UNICORN 7.2 vs UNICORN 7.1

Important Note

Note: *UNICORN 7.2 includes features that support alternative ways of deploying ÄKTA avant and ÄKTA pure™ systems. At present, all alternative deployments are not available, and therefore an updated version of this document will be published later with information on those features supporting the deployments.*

Support for ÄKTAcrossflow

Compatibility with the ÄKTAcrossflow system is implemented in UNICORN 7.2.

Support for filtration applications

Three workflows are added to the Evaluation module to support results analysis from filtration applications, using the following algorithms:

Capacity Plots

This algorithm allows the user to plot any process parameter versus the accumulating permeate volume normalized to the capacity, i.e., the surface area. For example:

- Flux vs Capacity
- TMP vs Capacity
- External vs Capacity

Diafiltration Time Optimization

- Finds the optimal concentration for diafiltration.
- Performed on results from a concentration process run at maximum concentration factor.

Process Optimization

- Analyze process characterization experiments where a series of set points are tested. For example, excursions of Transmembrane Pressure (TMP) at different cross flow rates and protein concentrations.
- Allows to overlay multiple plots. For example, Flux vx TMP at different cross flow rates or protein concentrations.

Firewall ports

The following firewall ports need to be opened:

- 40511
- 40512

Corrections and improvements

- Pressure calibration values are now handled correctly in ÄKTA ready™.
- UNICORN software can now log modifications in the filtration analysis.
- Filtration analysis can now be printed from UNICORN software.
- It is now possible to view the **Variables** and **Scouting** tabs in **Documentation** for a result in **Evaluation** even if the instrument server related to that result is not up and running.
- Several defects are corrected to improve quality both in UNICORN software and supported systems.

13 UNICORN 7.1 vs UNICORN 7.0.2

Support for filtration applications

Two workflows are added to the Evaluation module to support results analysis from filtration applications, using the following algorithms:

- Any versus any algorithm provides the capability to plot any process parameters captured as curves from a filtration run. The algorithm can be used to graphically display data from any two curves generated during concentration, diafiltration or processing of cells.
- Normalized Water Flux (NWF) algorithm used to test membrane permeability. The test allows to automatically calculate the normalized water flux from a result file, and also to view results from multiple cycles in a single plot. This helps to ensure that the cleaning process is effective and to determine the lifetime of a filter.

Monitor run in Column Volume (CV)

When the column volume is specified, the progress of a run in the **System Control** module can be monitored in CV both in the chromatogram, in **Run Data** and in the **Run Log**.

Flow rate in CV/h (Column flow)

UNICORN 7.1 adds functionality which simplifies scaling of methods when using columns with different bed height, as well as functionality for easy comparison of results run on different systems. UNICORN 7.1 has a new flow unit in CV/h, which can be used in **System Control** and when creating methods in the **Method Editor**. This flow is referred to as column flow and has a functionality similar to the existing linear flow (cm/h).

When using the column flow the residence time is kept even when scaling of methods using columns with different bed height.

Compare UV data generated with UV cells of different path length

In the **Evaluation** module, it is possible to normalize the UV curves in a result to make them appear as if they were detected by a UV cell with 1 cm UV path length. This simplifies comparison of results generated using different systems.

Calculate amount and concentration for legacy systems

UNICORN 7.1 provides support to calculate amount and concentration for results from older systems, by allowing the user to manually enter the UV path length where this is not provided by the system.

14 UNICORN 7.0.2 vs UNICORN 7.0.1

Secure Windows Active Directory communication

UNICORN 7.0.2 offers secure **Windows Active Directory** communication for user authentication. **Windows Active Directory** must be configured for secure communication.

For more information see *UNICORN Hardening Guide*.

Secure database communication

UNICORN 7.0.2 offers secure database communication with an option to use trusted certificates.

For more information see *UNICORN Hardening Guide*.

Change database password

The default database passwords for UNICORN software is changed targeting security issues.

UNICORN software can now be configured to use a new database password.

It is possible to generate an encrypted password or to enter an already encrypted password. This is done by running the **UNICORN Service Tool** after UNICORN software installation. See *UNICORN Service Tool User Manual* for details on how to configure UNICORN software to use the new database password.

Support for scouting on Frac-950

The possibility to set up scouting runs on specific fractionation parameters with Frac-950.

Corrections and improvements

The following corrections and improvements are implemented in UNICORN 7.0.2:

- Possibility to include snapshots in time base in reports.
- Linear flow is now handled correct when saving text edited phases to phase library. When such phase is added to another method using another column the same linear flow rate will be kept.
- Text wrapping is implemented in scouting header for long variable names.
- Possibility to define separate filters in **System control** for the Run log and the Run log curve.
- Correct calculation of *Run summary* when method contains watches.
- Possibility to change scouting for parameters set to **OFF** that have drop down lists, e.g. pump wash parameters.

- Corrected defect related to **Curve export** in **Evaluation Classic** when data reduction is selected.
- Corrected defect related to **Curve export** in **Evaluation Classic** when **Normalize retention** is selected.
- Import of methods and result from UNICORN 5 has improved with possibility to import the following:
 - Methods including messages with character "#".
 - Methods containing blocks with more than one **End_block** instruction.
 - Results that contains a date and time with indication of summer or standard time.
 - Results that contain signed questions.

15 UNICORN 7.0.1 vs UNICORN 7.0

SQL Server

The UNICORN software database is verified for:

- SQL Server 2008 R2, 32-bit and 64-bit, running on Windows 7 Professional with SP1 installed, 64-bit
- SQL Server 2012 with SP2 installed, 64-bit, running on Windows Server 2012 R2
- SQL Server 2014, 64-bit, running on Windows Server 2012 R2

Compatible systems

Compatibility with the ÄKTA ready system is implemented in UNICORN 7.0.1.

E-mail notifications

The functionality of sending e-mail notifications from UNICORN 7.0.1 is improved. It is now possible to send e-mail notifications about an event (alarm, warning, or error) that has been issued on the system, to the following persons:

- User who started the run
- User who currently has control of the system
- Optional e-mail receiver (type the appropriate e-mail address in the input field)

The users must define their e-mail addresses in the user profile to be able to receive the e-mail notifications.

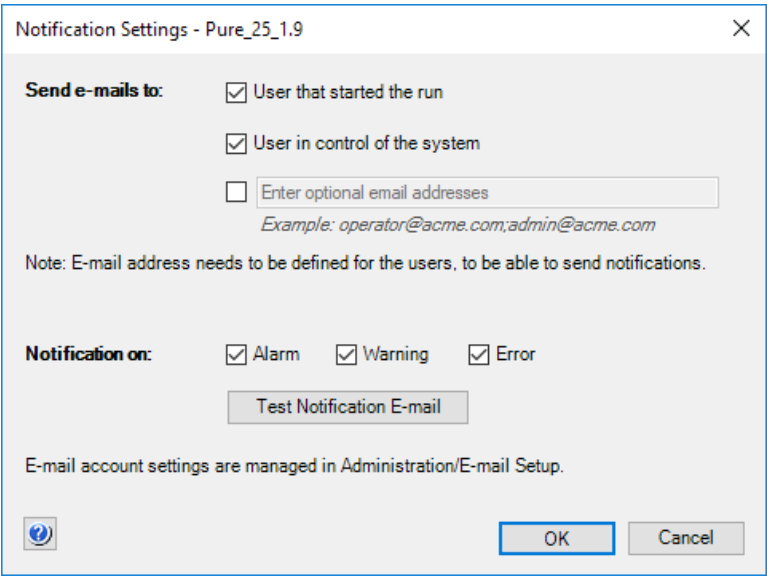
Follow the instructions to enable notifications for alarms, warnings and errors.

Step	Action
1	In the System Control module, on the System menu, click Notification Settings .

Step	Action
------	--------

Result:

The **Notification Settings** dialog box opens.



- | | |
|---|---|
| 2 | Select one or more of the available check boxes: <ul style="list-style-type: none">• User that started the run• User in control of the system• Enter optional email addresses. Type in one or more e-mail addresses in the empty text field. Separate multiple addresses with a semicolon. |
| 3 | Select for which occurrences notifications should be sent in the Notification on check boxes. |
| 4 | Click Test Notification E-mail to test if the e-mail settings are correct. |
| 5 | Click OK . |

Folder access rights

The user access rights in UNICORN 7.0.1 are specified as follows:

- All users who have access to a folder can read and write to the folder.
- All users who have access to a folder can rename items in the folder.
- To overwrite an item or to delete an item, the user must have the appropriate access rights specified. The administrator must select the check box **Delete/Move files & folders** to give the user these rights.

The user access rights described above are valid for both the user's home folder and for shared folders.

The access category **Delete/copy/move files & folders** has been renamed to **Delete/Move files & folders** to reflect the changes in folder access rights.

New upgrade procedure from UNICORN 6.0 or 6.1

You must have the UNICORN 6.0 or UNICORN 6.1 installation disks to uninstall these older versions of UNICORN.

Step	Action
1	Backup the database as described in UNICORN Administration and Technical Manual.
2	<p>Insert the UNICORN 6.0 or UNICORN 6.1 installation DVD in your DVD drive.</p> <p><i>Result:</i></p> <p>The UNICORN Installation wizard opens with a welcome dialog box.</p> <p>Tip:</p> <p><i>If the DVD drive is not set up to allow automatic start, browse the DVD contents and double-click the file <code>Setup.exe</code> in the UNICORN software folder to initiate the installation.</i></p>
3	Click Remove Installation and proceed to uninstall the old UNICORN software version.
4	Install the newer UNICORN software version as described in UNICORN Administration and Technical Manual, but do not define a system or import any column lists, report formats or recipes since the backup performed in Step 1 will be restored later on.
5	Install the workstation e-license on the instrument server computer as described in UNICORN Administration and Technical Manual.
6	<p>Uninstall the oldest version of OPC Core Components from the Windows Uninstall or change a program dialog box and repair the latest version.</p> <p>To open the Uninstall or change a program dialog box:</p> <ul style="list-style-type: none"> • In Control Panel, in the Programs group, click Uninstall a program.
7	<p>Restore the database backup as described in UNICORN Administration and Technical Manual.</p> <p>Note:</p> <p><i>The default backup location has changed since the old UNICORN software version so the old database backup might have to be moved into the new backup location. Run a manual backup as described in the to create this location.</i></p>

Step	Action
8	Upgrade the database as described in <i>UNICORN Administration and Technical Manual</i> .

Corrections and improvements

The following corrections and improvements are implemented in UNICORN 7.0.1:

- Various memory and performance defects have been corrected.
- Adjustable timeout has been implemented.

16 UNICORN 7.0 vs UNICORN 6.4.1

New Evaluation module

UNICORN 7.0.2 includes a default **Evaluation** module that provides a simplified user interface optimized for most commonly used workflows like quick evaluation, compare results and work with peaks and fractions.

General

- New user interface with instant visual feedback that supports common workflows such as:
 - Quick evaluation.
 - Compare results.
 - Work with peaks and fractions.
- Undo in several steps.

Peak area calculation

- Calculate amount and concentration in peaks.
- Align peaks to fractions.
- Integration window with improved baseline.
- Auto integration/Single click integration.

Results

- New result browser with quick filter and sorting options.
- Result preview in result browser.

Chart

- Right y-axis in chart.
- Display method information in chart:
 - Scouting variables.
 - Phases.
- Shift offset in both x and y direction.
- Zoom miniature displayed.
- Panning in zoomed chart.
- Change curve layout from context menu.
- Improved copy of chart.
- Easy curve selection.

Compare

- Compare in column volume unit.
- Compare results in overlay or tile view.
- Sort results on scouting variables to see trending.

Optional Evaluation Classic module

The previous evaluation module has changed name to **Evaluation Classic**. To perform operations like **DoE** that are not included in the default **Evaluation** module, users can easily switch to **Evaluation Classic**. This is an optional module that requires an additional license.

OPC certification

UNICORN software OPC server Data Access 2.05a and Data Access 3.0 have been certified by OPC Foundation.

Corrections and improvements

The following corrections and improvements are implemented in UNICORN 7.0:

- Corrections of the LDAP functionality.
- Raw data status is now kept when performing **Save as** and **Import** result.
- Corrected **Import curve from file** function.
- Improved algorithm for display of data in volume base. Previously the curve could be jagged at low flow rates.
- Improved options for configuring archiving of results in enterprise solutions.

17 UNICORN 6.4.1 vs UNICORN 6.4

UNICORN software Service Tool

The new application UNICORN software Service Tool is used to troubleshoot and set parameters in an existing UNICORN software installation. It can also be used to make sure that the operating system environment is properly set up prior to installing UNICORN software.

DoE sweet spot plot

The new DoE evaluation function sweet spot plot graphically displays the range where two or more selected response criteria are satisfied.

Database connection status

A database connection status field is added to the status bar of the **System Control** module.

OPC certification

UNICORN software OPC server Data Access 2.05a and Data Access 3.0 are certified by OPC Foundation.

Corrections and improvements

The following corrections and improvements are implemented in UNICORN 6.4.1:

- Improved error handling when database connection is lost.
- Corrected peak detection algorithm. It is now possible to detect signal levels lower than the signal level at the start of detection.
- Corrected BufferPro recipe creation. It is now possible to select an **Acid/Base** when only one buffer substance is selected.
- Improvement of DoE re-randomize of experimental plan. If possible, system setup is kept when changing DoE response or factor settings.
- It is now possible to export methods or results to UNC path (\\server\\share\\folder path).
- It is now possible to install a database when security policies forced passwords to be longer than 8 characters.

18 UNICORN 6.4 vs UNICORN 6.3.2

UNICORN software extension framework

In UNICORN 6.4 it is possible to extend UNICORN with software packages for specific purposes, that is, extensions.

UNICORN software extensions can be loaded into all UNICORN applications.

UNICORN software database compatibility

After upgrading the UNICORN database to the database version that is delivered together with UNICORN 6.4 (database version 1.6.7), it is still possible to connect UNICORN 6.3.2 clients to the upgraded database.

Note: *Future database versions will allow for minor upgrades of the database where the old clients does not have to be upgraded.*

Corrections and improvements

The following corrections and improvements are implemented in UNICORN 6.4:

- Major performance improvements of creating and editing large methods.
- Corrections in the **Maintenance Manager** dialog for UNIFLUX systems.
- Unable to view X-axis in CV in the **Method Editor** module.
- Improvements of the handling of the CompactFlash (CF) memory card of CU-960.
- The **Maintenance Manager** dialog support for ÄKTA explorer and ÄKTA purifier.
- Correction of the import of UNICORN 5 strategies.
- Correction of issues in the **Method Wizard** for ÄKTA explorer and ÄKTA purifier that occurred when using sample pump.
- CU-960 communication issues have been solved. Changes in the CU-950/960 software have been introduced to avoid short disconnects between the CU-950/960 and the UNICORN PC. This occurs mostly when starting a method or manual run after the system has been idle for several hours.

Note: *It is recommended that the CF memory card is removed if **System settings** → **Generic** → **Data recovery** → **OFF** is selected in the **System Control** module.*

19 UNICORN 6.3.2 vs UNICORN 6.3.1

Import and export of DoE results, method queues and folders

In UNICORN 6.3.2 it is possible to import and export **Design of Experiments** results, method queues and folders to and from a specified target system from the **Method Editor** module and the **Evaluation** module.

Support for cell cultivation

UNICORN 6.3.2 has support for control, supervision and evaluation of cell cultivation runs.

Corrections and improvements

The following corrections and improvements are implemented in UNICORN 6.3.2:

- Correction of the issue that it was not possible to access text methods in some results.
- Improvements of connection between UNICORN and UNICORN Instrument Server.

20 UNICORN 6.3.1 vs UNICORN 6.3

Corrections

The following corrections and improvements are implemented in UNICORN 6.3.1:

- Retrieval of results from older UNICORN software versions is supported.
- Pressure regulation functions when working from the ***Process picture***.
- Shorter waiting time for starting a method queue.
- Method notes are saved in a method or result file.
- ÄKTA avant sample application phase works.

21 UNICORN 6.3 vs UNICORN 6.2

Client and instrument server installation

For UNICORN 6.3 the client and the instrument server installations are no longer separated.

License handling

UNICORN 6.3 features a new solution for license handling. There are different types of e-licenses. A node locked license can be used on one workstation only and a floating license can be used on any workstation in a network, however only on one workstation at the time. **Design of Experiments** and **Column handling** require separate e-licenses.

Power-save

In UNICORN 6.3, it is possible to enable power-save for a connected ÄKTA pure system. A time can be set for how long the instrument is in state **Ready** before power-save mode is entered.

E-mail notifications

UNICORN 6.3 features the possibility to make notification settings. If an alarm, a warning or an error occurs during a run, it is possible to get a notification sent to a specified e-mail address.

Column type filtration

It is possible to filtrate the column type list based on **Technique**, **Diameter**, **Access label** and/or **Search** criteria.

Process picture

UNICORN 6.3 has a new improved process picture applicable for ÄKTA pure, with the possibility to execute instructions directly from the process picture.

Performance test method layout

The layout of the performance test methods has been improved in UNICORN 6.3.

Adapt methods

UNICORN 6.3 features a new solution to automatically adapt a method when opening or saving it after change of active components for an ÄKTA pure system.

Corrections and improvements

A number of corrections and improvements are implemented in UNICORN 6.3, including the following:

- Improved stability in the connection between the UNICORN Client and the ÄKTA system.
- Improved resource management and memory usage.
- Simplified installation and uninstallation of UNICORN.

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