



Product Release Notes

SampleManager LIMS 12.2

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Contents

Introduction	4
Recent SampleManager Releases	4
Hardware Recommendations	5
Database Server	5
Application Server	5
Web Client Server	5
Desktop Client	6
Web Client	6
Network Recommendations	7
Supported Platforms	8
Hardware Configurations	8
Software Configurations	8
Database.....	8
SampleManager Application and Web Server OS	8
Desktop and Web Client OS	8
Web Client Browsers	9
SampleManager Mobile App	9
SampleManager Web Application Browsers	9
Related Thermo Scientific software products.....	9
Third-Party Software	9
Supported Chromeleon CDS Versions	10
Features	13
Functional Area(s)	13
Interface Modernization	13
Multi Level Product Specifications (MLPs)	14
Instruments.....	15
Incident Management.....	18
Certificates	20
Personnel	22
Sample Retention and Disposal.....	23
Plates	24
Batches.....	25
Barcodes	26
Entity Templates	27

Menu Usage Metrics	29
Reports and Labels	30
Localization	31
Multi-Site Deployment	32
User Profiles	33
Schema Layouts	34
Cyber-Security Enhancements	36
Chromeleon Link	38
Data Manager	38
Documentation Amendments and Additions	40
Create Batch Adhoc Workflow Node	40
Disabling Translation of Text Fields in C# Tasks	41
Valid Storage Types for Locations and Location Types	41
Read Results from Instrument in Web Client	41
Stability VGL Desupport	42
Fixed Issues	43
Issues and Enhancement Requests Addressed by New and Refactored Features	44
Known Issues	46
Database Changes	47

Introduction

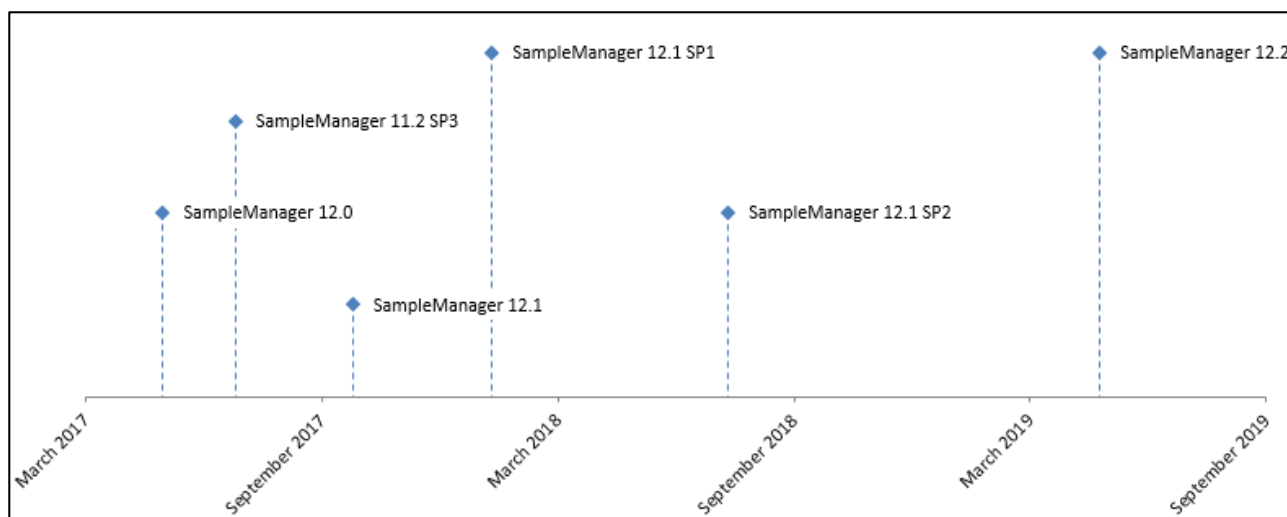
Thermo Fisher Scientific is pleased to announce the release of Thermo Scientific™ SampleManager LIMS™ software version 12.2. The content in this document describes new and/or revised functionality in this version of the product, as well as supported platform combinations, fixed issues and known issues.

Please always be sure to check the support site for any updates to this product.

Recent SampleManager Releases

SampleManager LIMS 12.2 supports upgrades from the following versions:

- SampleManager LIMS 12.1
- SampleManager LIMS 12.1 SP1
- SampleManager LIMS 12.1 SP2



Hardware Recommendations

The following section contains information on the recommended hardware for SampleManager version 12.2.

Database Server

Refer to your Oracle® Database or Microsoft® SQL Server™ documentation.

Application Server

The SampleManager application server requires the following minimum hardware:

	Minimum Specification
CPU	Dual-core processor for up to 20 concurrent connections + 1 additional core for every 10 additional concurrent connections
RAM	2 GB + 125 MB for each concurrent connection
Hard Disk	1 GB + 200 MB for installation files

To support more concurrent connections, you must add more processor cores and memory to your application server. For example:

	0–20 Concurrent Connections	20–40 Concurrent Connections	40–60 Concurrent Connections
CPU	Dual-core processor	Quad-core processor	Six-core processor
RAM	8 GB	8 GB	16 GB

Note These requirements are for a SampleManager application server only. If the same machine is also used as a database server or web client server, you must include additional resources.

Web Client Server

The SampleManager web client server requires the following minimum hardware:

	Minimum Specification
CPU	Dual-core processor for up to 20 concurrent connections + 1 additional core for every 10 additional concurrent connections
RAM	4 GB + 200 MB for each concurrent connection
Hard Disk	1 GB + 614 MB for installation files

To support more concurrent connections, you must add more processor cores and memory to your web client server. For example:

	0–20 Concurrent Connections	20–40 Concurrent Connections	40–60 Concurrent Connections
CPU	Dual-core processor	Quad-core processor	Six-core processor
RAM	8 GB	12 GB	16 GB

Note The web client server is used to host the SampleManager web client software, so that end users (on web client machines) can access SampleManager using their web browsers.

Desktop Client

The SampleManager desktop client requires the following minimum hardware:

	Minimum Specification
CPU	2.5 GHz processor
RAM	4 GB
Hard Disk	250 MB for installation files
Display	1400 × 1050 or 1440 × 900 resolution with support for Microsoft® DirectX®

Web Client

The SampleManager web client requires the following minimum hardware:

	Minimum Specification
CPU	2.5 GHz processor
RAM	4 GB
Display	1400 × 1050 or 1440 × 900 resolution with support for Microsoft® DirectX®

Note The web client requires only a web browser, that is, you do not need to install any SampleManager components.

Network Recommendations

The following table contains information on the recommended network latency for SampleManager version 12.2.

Network Path	Recommended Latency
Application server to database server	Less than 1 ms
Web client server to application server	Less than 1 ms
Desktop client to application server	Less than 120 ms
Web client to web client server	Less than 120 ms

Supported Platforms

The following section contains information on the platforms currently supported for SampleManager LIMS version 12.2.

Hardware Configurations

Not applicable

Software Configurations

Database

Oracle® 12c

Note SampleManager 12.2 was tested using Oracle 12.2.0.1.0.

Microsoft® SQL Server™ 2017

Microsoft® SQL Server™ 2016 SP2

Microsoft® SQL Server™ 2016 SP1

SampleManager Application and Web Server OS

Microsoft® Windows® Server 2016

Note SampleManager 12.2 was tested using Microsoft Windows Server 2016 Standard Edition.

Desktop and Web Client OS

Microsoft® Windows® 7 SP1 x64 Professional

Microsoft® Windows® 7 SP1 x32 Professional

Microsoft® Windows® 10 x64 Professional

Note SampleManager 12.2 was tested using Microsoft Windows 10 Professional version 1803.

Microsoft® Windows® 10 x64 Enterprise

Note SampleManager 12.2 was tested using Microsoft Windows 10 Enterprise version 1803 and 1809.

Citrix XenApp® 7.15 (using Citrix Receiver™ for Web)

Web Client Browsers

Microsoft Edge

Google Chrome™

Note We strongly recommend that you use Google Chrome for optimum performance. SampleManager 12.2 was tested using Google Chrome versions 70.0, 71.0, and 72.0.

SampleManager Mobile App

Thermo Scientific™ SampleManager Mobile™ 2.0.1

Note The SampleManager Mobile app and the supporting SampleManager WCF Service REST API were not updated for this release. For information about SampleManager Mobile app 2.0.1, see the *Thermo Scientific SampleManager LES 11.2 Release Notes*.

SampleManager Web Application Browsers

Microsoft® Internet Explorer® 11.0

Note The SampleManager Web Application is a legacy feature that provides access to a limited subset of SampleManager functions through the associated SampleManager web site. Due to the limitations of the operating system and the .NET Framework version used by the SampleManager web application, only Microsoft® Windows Server® 2008 R2 SP1 is supported for use as the SampleManager web application server.

Related Thermo Scientific software products

Thermo Scientific™ Integration Manager™ 3.2 SP1

Thermo Scientific™ Integration Manager™ 3.2 SP1 RU1

Thermo Scientific™ SampleManager IDI™ 11.1

Thermo Scientific™ SampleManager IDI™ 11.1 RU1

Thermo Scientific™ Chromeleon™ Chromatography Data System (CDS) version 7.2 SR5 or newer

Note The features available in the SampleManager LIMS Chromeleon CDS Link functionality depend on the version of Chromeleon CDS that SampleManager LIMS connects to. For more information, see [Supported Chromeleon CDS Versions](#) (page 10).

Third-Party Software

Microsoft® Hyper-V® 2016

Microsoft® Active Directory® 2016

Microsoft® Office 2016

Microsoft® Office 2013

Microsoft® Office 365® in installed application mode

Amazon Web Services® (using Amazon RDS and hosting the SampleManager application server and SampleManager Web Server as virtual machines)

Supported Chromeleon CDS Versions

The features available in the SampleManager LIMS Chromeleon CDS Link functionality depend on the version of Chromeleon CDS that SampleManager LIMS connects to. For more information about Chromeleon Link features, see the "Chromeleon Link" chapter in the *SampleManager LIMS Configuration Guide*. For more information about configuring the User Mode connection between SampleManager and Chromeleon CDS, see the "Installing Chromeleon Link" chapter in the *SampleManager LIMS Installation Guide*.

The following table shows which features are available when SampleManager LIMS 12.2 connects to different versions of Chromeleon CDS through the Chromeleon Link:

✓ Feature is available with this version of Chromeleon CDS

✓* Feature is available with this version of Chromeleon CDS. The corresponding SampleManager Chromeleon Interface component must be installed on the Chromeleon CDS server.

Feature	Chromeleon CDS Version			
	7.2 SR5	7.2.6	7.2.8	7.2.9
In SampleManager, create a Chromeleon sequence with a specified instrument method and processing method. Send the sequence to Chromeleon CDS, where you can review the sequence and add it to an instrument queue.	✓	✓	✓	✓
In SampleManager, create a Chromeleon sequence with a specified eWorkflow. Send the sequence to Chromeleon CDS, where you can review the sequence and add it to an instrument queue.	✓	✓	✓	✓
In SampleManager, configure the naming mechanism for Chromeleon sequences.	✓	✓	✓	✓
In Chromeleon CDS, run an eWorkflow and pull samples from a SampleManager batch sequence.		✓*	✓*	✓*
In Chromeleon CDS, run an eWorkflow and pull samples from SampleManager.				✓*
In SampleManager, specify injection information (such as volume, weight, and dilution) that will be sent to Chromeleon CDS.	✓	✓	✓	✓
In SampleManager, specify standard concentration information that will be sent to Chromeleon CDS.	✓	✓	✓	✓
In SampleManager, configure properties that will be sent to Chromeleon CDS as custom properties of sequences and injections created from SampleManager data. The custom properties can be populated with values pulled from SampleManager batches, samples, or tests.	✓	✓	✓	✓

Feature	Chromeleon CDS Version			
	7.2 SR5	7.2.6	7.2.8	7.2.9
In SampleManager, map analysis components to the corresponding Chromeleon CDS processing method components.	✓	✓	✓	✓
In SampleManager, translate the sample types in a batch list to the corresponding Chromeleon CDS injection types.	✓	✓	✓	✓
In Chromeleon CDS, use custom variable send flags to indicate that results are ready to transfer to SampleManager.	✓	✓	✓	✓
In Chromeleon CDS, use the injection lock flag to indicate that results are ready to transfer to SampleManager.	✓	✓	✓	✓
In Chromeleon CDS, use 'end point' triggers in the Chromeleon Administration console to indicate that results are ready to transfer to SampleManager.			✓	✓
In SampleManager, manually retrieve sequence results from Chromeleon CDS based on the peak information in Chromeleon CDS.	✓	✓	✓	✓
In SampleManager, manually retrieve sequence results from mapped cells in a Chromeleon CDS report.	✓	✓	✓	✓
In Chromeleon CDS, manually select a sequence and send its results to SampleManager.				✓*
Use the Download Immediately option to automatically send results to SampleManager when the trigger conditions set in the Chromeleon Administration console are met.			✓	✓
Use the SampleManager background to automatically retrieve results.	✓	✓	✓	✓
In Chromeleon CDS, use the Ready Check to verify that the current user is allowed to run the sequence and that the instrument is ready for use. The user permissions and instrument status are obtained from SampleManager.		✓*	✓*	✓*
Connect SampleManager to Chromeleon CDS without specifying login details (User Mode disabled).	✓	✓	✓	✓

Feature	Chromeleon CDS Version			
	7.2 SR5	7.2.6	7.2.8	7.2.9
Connect SampleManager to Chromeleon CDS with a single Chromeleon CDS user account for all SampleManager operations (User Mode enabled, login details supplied during installation).	✓	✓	✓	✓
Connect SampleManager to Chromeleon CDS with individual SampleManager operators mapped to specific Chromeleon CDS user accounts (User Mode enabled, Chromeleon login details stored in SampleManager personnel records).	✓	✓	✓	✓
In SampleManager, view the status of Chromeleon CDS instruments.	✓	✓	✓	✓
In SampleManager, the Chromeleon Sequence Report workflow node can retrieve a sequence report from Chromeleon CDS.	✓	✓	✓	✓
In SampleManager, the Chromeleon Injection Report workflow node can retrieve an injection report from Chromeleon CDS.	✓	✓	✓	✓

Features

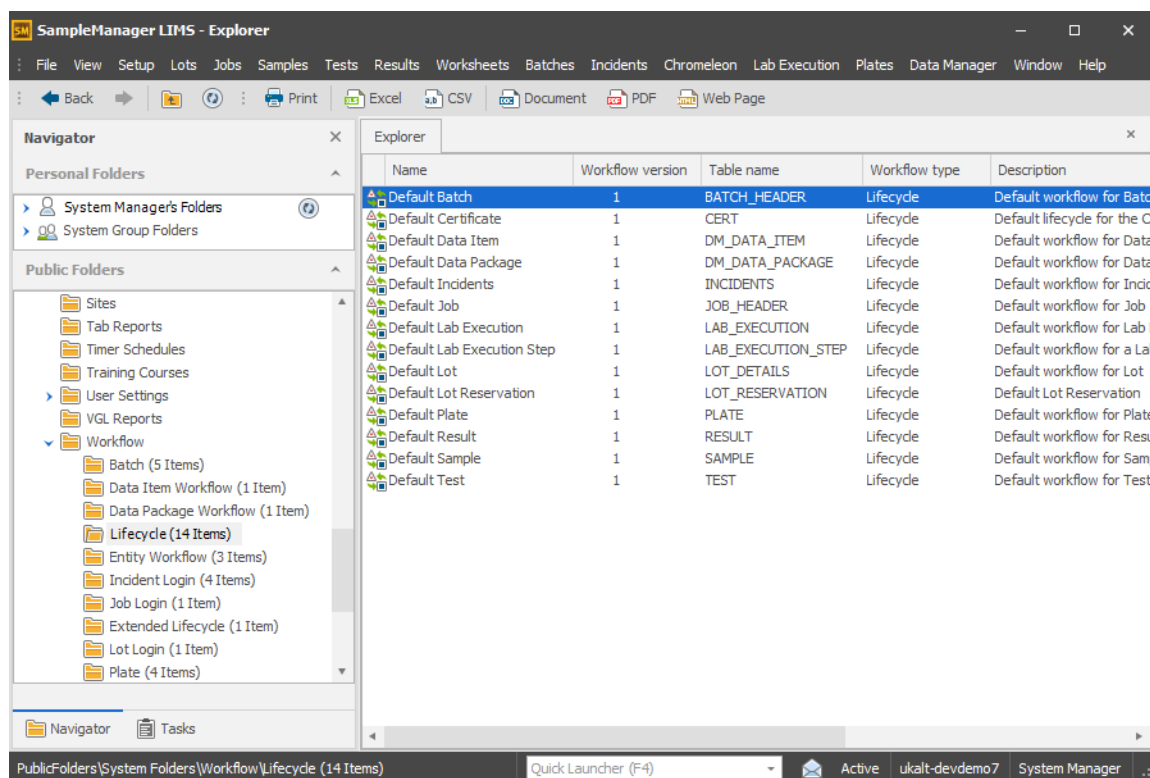
This product release introduces the new and modified features for SampleManager LIMS version 12.2.

Functional Area(s)

Interface Modernization

SampleManager has a new set of icons that applies in both the desktop and web clients. An updated set of skins can be applied to adjust the appearance of the user interface according to the preference of individual users.

The quick launcher, on the status bar at the bottom of the main SampleManager window, lets you search for functions, tables, entities, and areas in SampleManager. You can search for specific or ambiguous terms, and run master menu options by entering a procedure number or mnemonic.



For more information, see the "User Interface" chapter in the *SampleManager LIMS User Guide*.

Requirement	Description
RQ-SMC-0000437	Update look and feel
RQ-SMC-0000456	Application branding

Multi Level Product Specifications (MLPs)

The following entity types now have property sheets that replace the VGL-based LTEs:

- MLPs
- MLP Levels
- Limit Phrases
- Limit Calculations
- MLP Families

MLP Header - Modify - Flue gas specification

General Definition Levels Components Limits Schedules Attachments Versions Inspection

Levels

Limits for Level 'Target level'

Analysis Na...	Component	Min	Max	Text	Phrase	Boolean	Calcula...
Flue gas	NO	10	20				
Flue gas	NO2	10	20				
Flue gas	SO	10	20				
Flue gas	SO2	10	20				

Display All OK Cancel Apply

The new Include Expression field on the Definition page of the MLP Level lets you specify a Boolean expression. When a lot, job, sample, or result is checked against an MLP, the check includes the MLP Levels where the Include Expression returns True, or is empty. This feature lets you create MLP Levels that only apply in specific circumstances, for example in summer.

MLP Level - Modify - Summer (June - August)

General Definition Attachments

Behavior
 An expression can be specified to control the inclusion of this level during checking. Control what happens on failure.
 Include Expression: `IsJune( ServerNow() ) Or IsJuly( ServerNow() ) Or IsAugust( ServerNow() )` *fx*
 Result Action: **Allow**

Notification
 Specify a message to be shown to the user when this level check fails.
 Display Message: ☒
 Message to display: Failed summer limit.

Incidents
 An incident can be created when this limit check fails. Use either an incident template or workflow.
 Incident Workflow: **Single Result Incident**
 Incident Template:

Execution
 A VGL routine can be run at specific points during limit checking. Specify when report execution should take place and which report routine to call.
 Call Report: **Disabled**
 Report to call:
 Routine to call:

OK Cancel Apply

MLPs now use the same versioning mechanism as other versioned entity types, such as analyses. You can export an MLP with all its levels and limits to an XML file that you can import into another SampleManager instance.

Requirement	Description
RQ-SMC-0000113	Update MLPs

Instruments

The new maintenance schedule entity type can be used to define multiple calibration and maintenance tasks required for instruments and instrument parts.

A maintenance schedule represents a maintenance procedure that must be performed at specific times. You can assign maintenance schedules to instruments and instrument parts to manage the regular tasks, such as calibrations and services, that are required when the item is in use in your laboratory.

If a maintenance schedule is assigned to a template, such as an instrument template, it defines the properties of the maintenance schedules that will be assigned to entities based on that template.

To create a maintenance schedule, add it to the Maintenance page of its parent entity.

Maintenance

General

Scheduling

Run Time

Definition

Plan

MONTH=(4) DAY=(1) TIME=(9:00)

Calc On Completion

☒

Lead Time

7 00:00:00.00

Workflow

Owner

Joceyln Peabody

Contractor

Thermo Fisher Scientific

Auto Login

☐

OK

Cancel

The new Maintenance page is available in the following property sheets:

- Instrument
- Instrument Part
- Instrument Template
- Instrument Part Template

The new Maintenance page shows the list of maintenance schedules assigned to the entity. Each maintenance schedule represents a task that is required to make sure that the instrument operates correctly. For example, you can assign regular calibration and service procedures to the instrument.

Instrument - Modify - Trace 1310 GC 7689

General

Specification

Parts

Parameters

Training

Events

Integration

Maintenance

Details

Parent Status

Available

Name	Type	Status	Workflow	Last Maint	Next Maint
Weekly calibration	Internal Calibration	Available		31/08/2018 14:34	03/09/2018 09:00
Annual service	External Service	Available		31/08/2018 14:35	01/04/2019 09:00

Order	Sample Id	Textual Id	Status	Login Date
-------	-----------	------------	--------	------------

OK

Cancel

Apply

The new Maintenance page appears when the use_maintenance field is True. In all tables that contain the use_maintenance field, the default value is True for new records. If the record was created in a SampleManager version older than SampleManager LIMS 12.2, or the record was

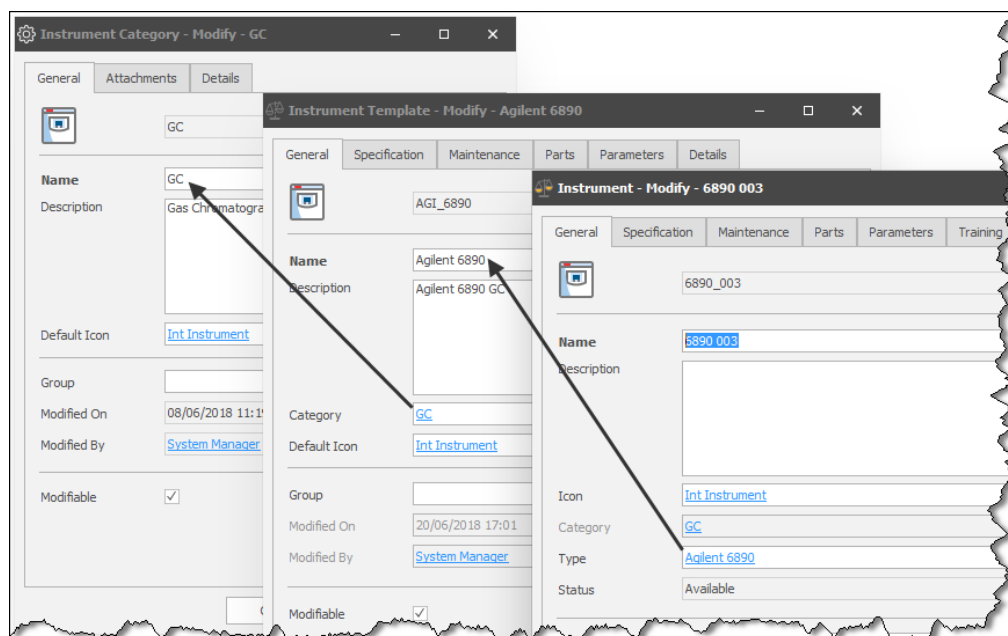
based on a template that was created in a version older than SampleManager LIMS 12.2, the use_maintenance field might be False. When the use_maintenance field is False, the property sheet shows the original Maintenance page that lets you assign simple calibration and service schedules.

An instrument category represents a class of instrument, for example balance, GCMS, or refractometer.

Instrument categories can be used for the following purposes:

- Grouping instrument type records for reporting and management purposes.
- Grouping instrument records for reporting and management purposes.
- Specifying the class of instrument required to perform an analysis, without specifying a particular instrument model.

The following example shows the relationship between an instrument category, instrument type, and instrument.

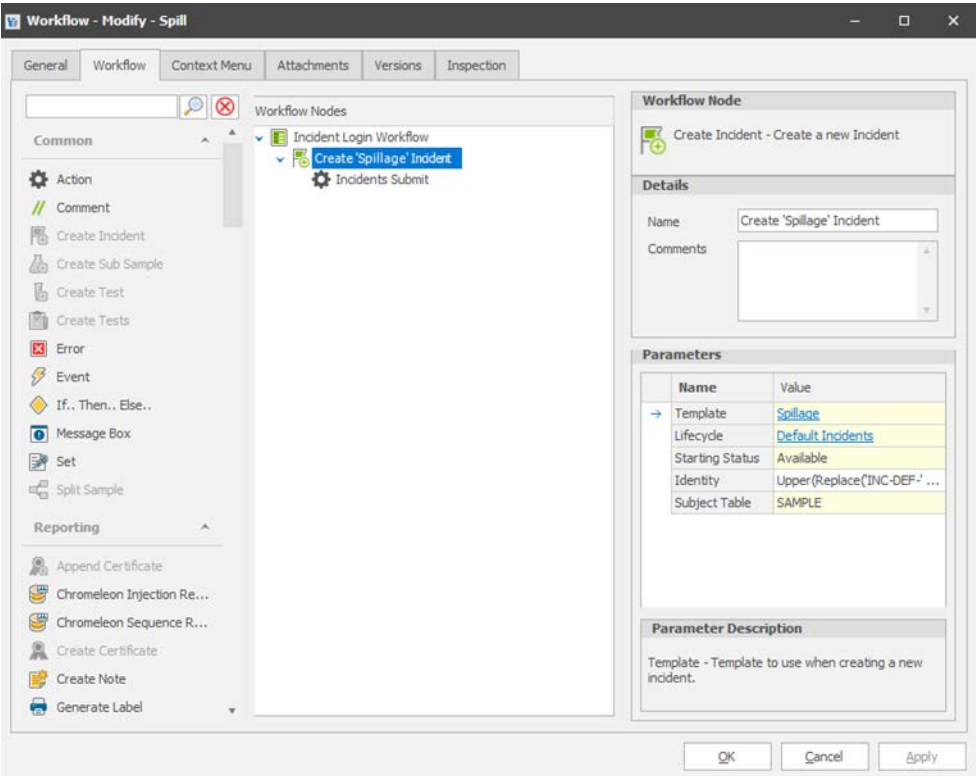


For more information, see the "Instruments" chapter in the *SampleManager LIMS Reference Guide*.

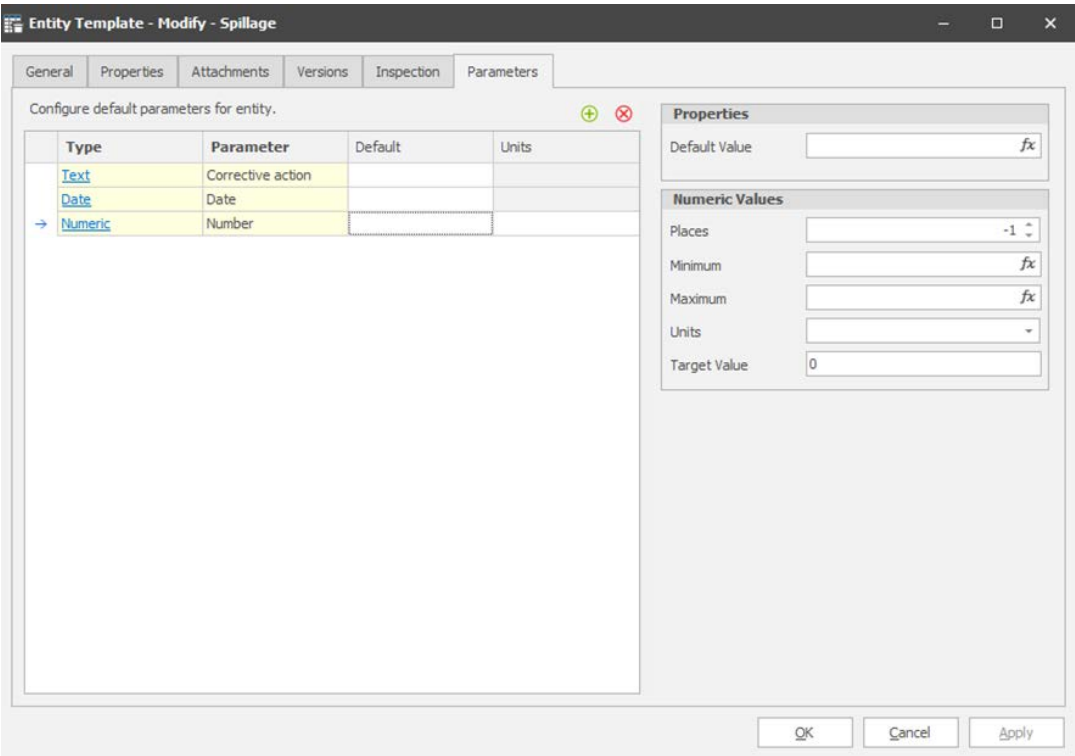
Requirement	Description
RQ-SMC-0000314	Multiple calibration schedules for an instrument
RQ-SMC-0000424	Enable instrument category throughout system

Incident Management

You can log in incidents with an incident login workflow. The incident login workflow defines the processing lifecycle that applies to the incident.



An entity template defines the fields that are available when you log in an incident, and the parameters that appear in the incident checklist.



When you create an incident using a workflow, the parameters defined in the entity template appear in the grid in the lower half of the Incident window.

Incident INC-DEF-000026 Checklist

Details

IncidentsINC-DEF-000026Open

Description

Name	Value
Corrective action	Mop up spill
→ Date	09/04/2018 00:00
Number	

Date parameter (format of parameter is forced to date)

OKCancelApply

The previous incident management mechanism, based on incident templates, is still available. For more information, see the "Incident Management" chapter in the *SampleManager LIMS Reference Guide*.

Requirement	Description
RQ-SMC-0000109	Incident Management Enhancements

Certificates

A certificate contains information about the results obtained for specific lots, jobs, or samples. Each certificate has two elements:

- A certificate report, generated from a report template. When the certificate is authorized, a copy of the report in .pdf format is stored in the database.

ThermoFisher SCIENTIFIC 1 St Georges Court Altrincham Cheshire United Kingdom WA14 3TP	Thermo Fisher Scientific Certificate The world leader in serving science	 CERT-SAMPLE-000002 Quality Document PDP 11 Version 1.0
---	---	--

Certificate	CERT-SAMPLE-000002	
Customer	Strawberry Jam	Certificate Version: 1
Product		Created By: Sarah-Jane Smith
Grade		Created On: 05/04/2019 12:00:52
Comments		

This certificate concerns this sample.

Sample	SM-5-APR-2019-000022	
Identity	0	Priority: 1
Sample Point		Sampled Date: 05/04/2019 11:55:38
Type		Date Results Required: 05/04/2019 11:55:38

The following results have been measured.

Analyte	Component	Result	Units	Specification
pH1	pH	3.2		3.1 - 3.3
Jam Jar QA/1	Fill Quantity	98	%	95 - 105
	Label Condition	Pass		
	Jar Clean	Pass		
	Flavor	Pass		
Organoleptic Assessment/1	Aroma	Pass		
	Appearance	Pass		
	Color	Red		Red
Sugar Content/1	Sugar % by Weight	63.1	%	61.5 - 63.5

This certificate has been authorized for release.

Authorized By	Sarah-Jane Smith	
Date Authorized	05/04/2019 12:03:21	

05/04/2019 12:03 CERT-SAMPLE-000002 Page 1 of 1

- A collection of records in the SampleManager database that contain the data included in the certificate report. If the certificate has a status of D (Draft), the certificate can be regenerated, which updates the data included in the certificate. When a certificate has any other status, the data associated with the certificate is read-only and a new version of the certificate must be created if the entities included in the certificate have changed.

Certificate CERT-SAMPLE-000002

Certificate Details	
Name	CERT-SAMPLE-000002
Version	1
Status	Draft
Template	cert1
Created By	Sarah-Jane Smith
Date Created	05/04/2019 12:00
Primary Sample	23

Template Properties	
Inspection Plan	
Product	Strawberry Jam
Grade Code	
Customer	
Comments	

Reported Samples			
Numeric	Text	Status	Login Date
23	SM-5-APR-201...	Auth...	05/04/201...

Reported Tests			
Test Number	Analysis	Sample	Status
20	Jam Jar...	23	Authori...
21	Organo...	23	Authori...
22	pH	23	Authori...
23	Sugar ...	23	Authori...

Reported Results					
	Analysis	Name	Value	Units	Limits
→	pH/1	pH	3.2		3.1 - 3.3
	Jam Jar QA/1	Fill Quantity	98	%	95 - 105
	Jam Jar QA/1	Label Condition	Pass		
	Jam Jar QA/1	Jar Clean	Pass		
	Organoleptic Assessment/1	Flavor	Pass		

OK Cancel Apply

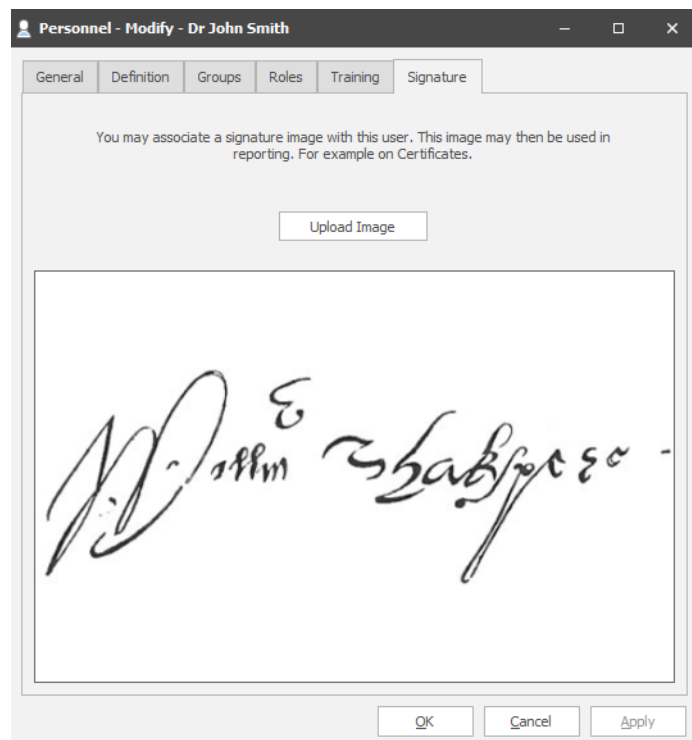
Certificates are generated from certificate templates and follow a lifecycle workflow.

For more information, see the "Certificates" chapter in the *SampleManager LIMS System Administration Guide*.

Requirement	Description
RQ-SMC-0000453	Certificates

Personnel

The Personnel property sheet has a new Signature page, which lets you upload an image of the operator's signature. The signature image can appear in reports generated by the operator.

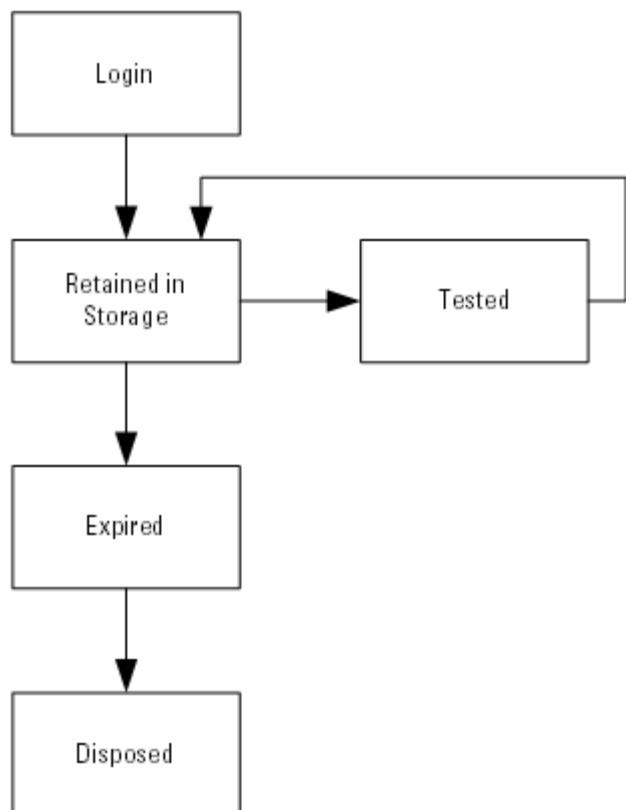


For more information, see the "Security" chapter in the *SampleManager LIMS System Administration Guide*.

Sample Retention and Disposal

SampleManager can manage the collection, testing, storage, and disposal of retain samples. Retain samples are quantities of material that are kept in storage so that they can be retested if necessary.

By default, retain samples use the Retain Sample Lifecycle, which extends the Default Sample lifecycle with extra statuses and actions.



SampleManager uses a different mechanism to associate retain samples with parent jobs and samples so that the lifecycle of each parent job or sample is not affected by the status of any associated retain samples. For example, a job can be authorized while the retain samples associated with the job have a status of B (Retained).

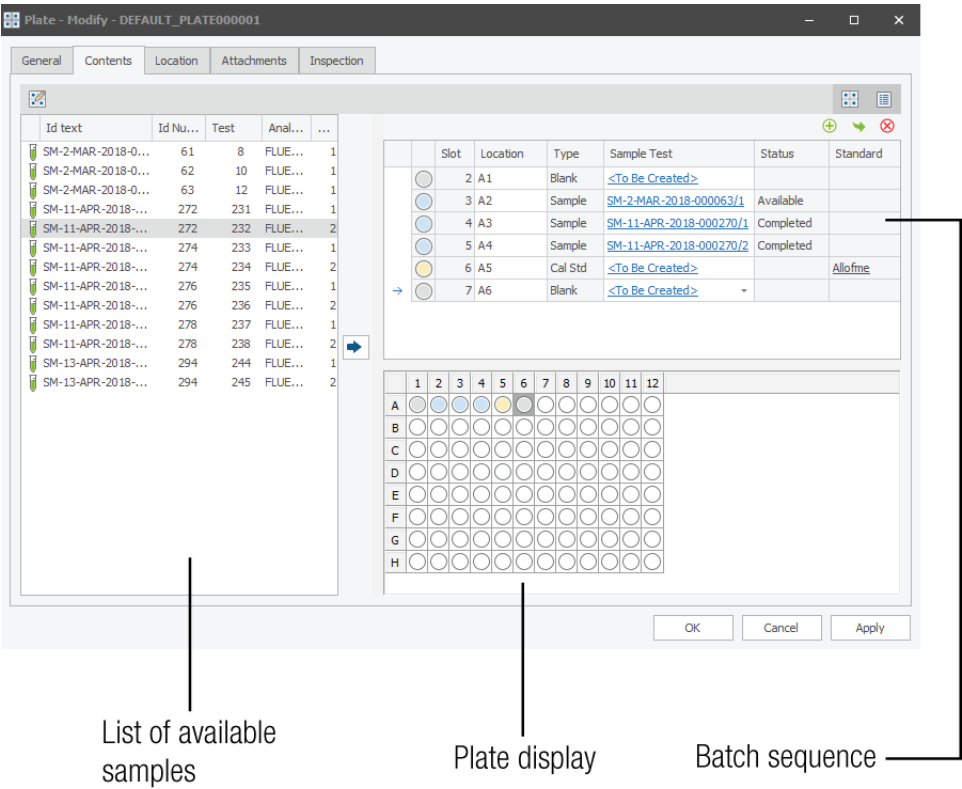
For more information, see the "Retain Samples" chapter in the *SampleManager LIMS Reference Guide*.

Requirement	Description
RQ-SMC-0000359	Sample retention / disposal

Plates

The use of multi-well plates is becoming increasingly prevalent within the SampleManager customer footprint, and standard features to allow their management needs to be added so that the plates can be created and managed within the system.

Plates show the samples for analysis in their physical positions in a simulated multiwell plate. Plates can represent items such as microtiter plate assays, cell culture plates, electrophoresis gels, or storage boxes. SampleManager can track the location of plates as they move through the laboratory. You can build and process a batch sequence that determines the samples that are loaded on a plate. For more information, see the "Plates" chapter in the *SampleManager LIMS Laboratory Execution Guide*.

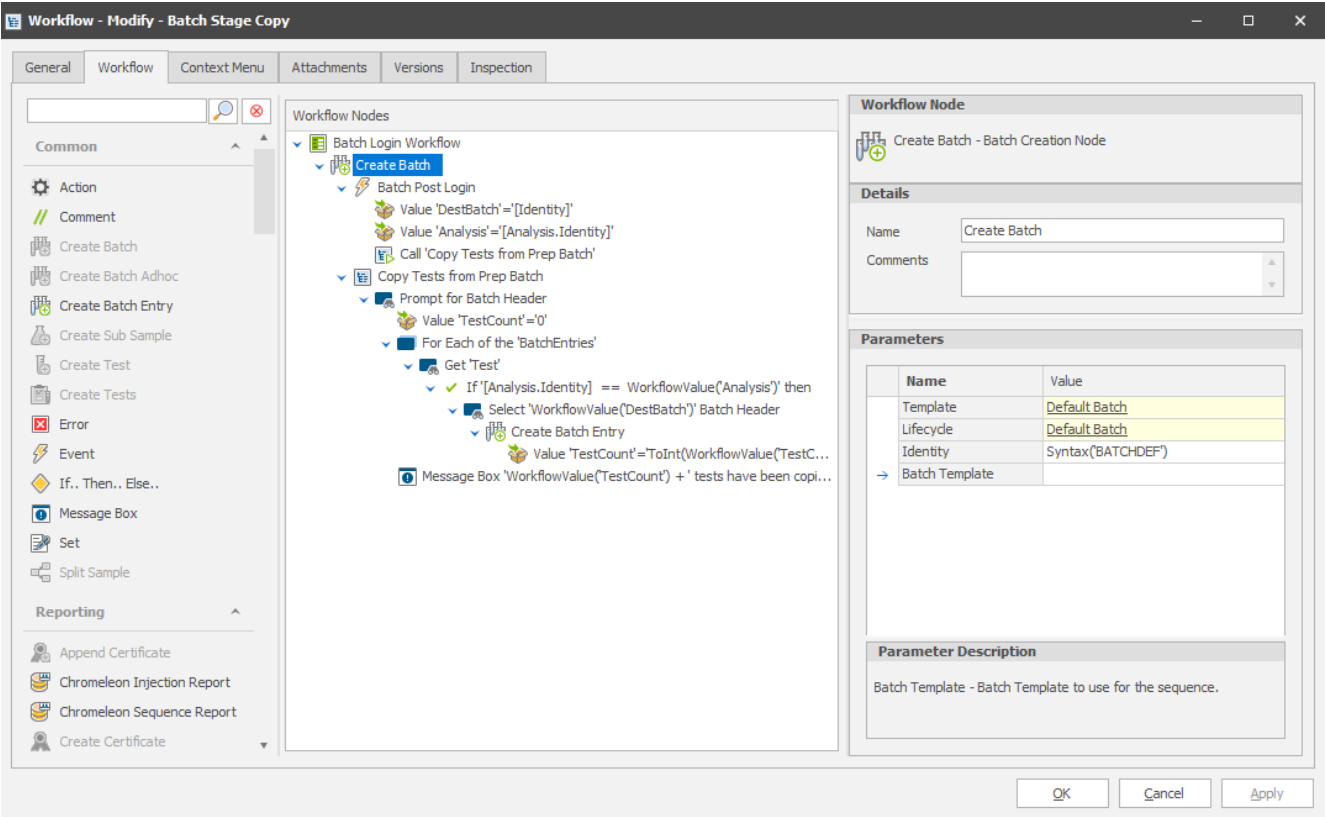


Plates are created and managed by plate login workflows. For more information, see the "Workflows" chapter in the *SampleManager LIMS Reference Guide*.

Requirement	Description
RQ-SMC-0000171	Plate visualization and manipulation

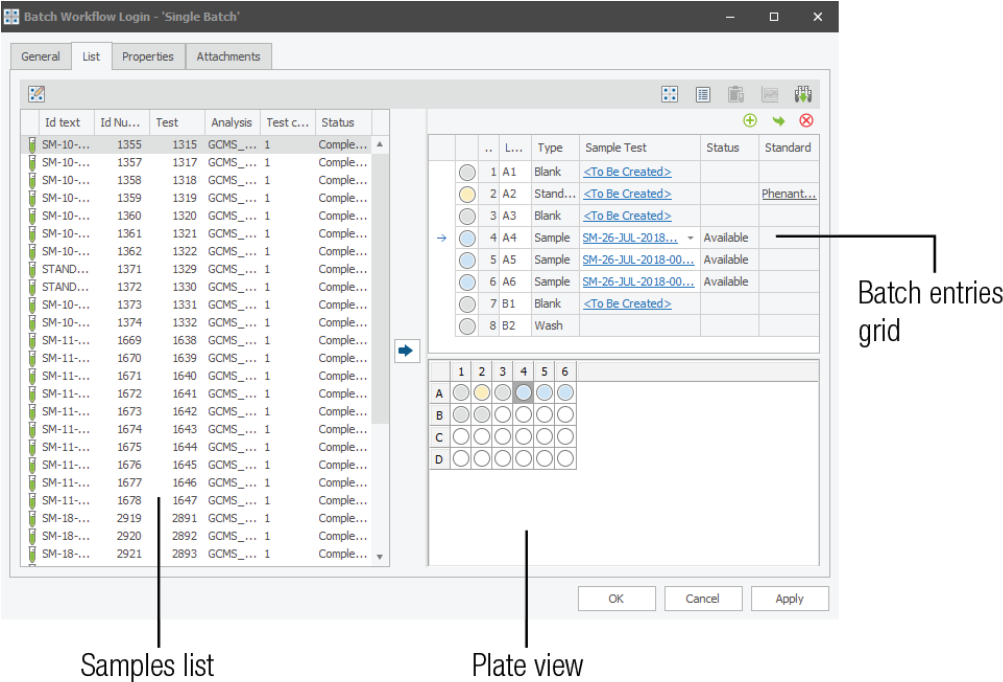
Batches

You can log in a batch with a batch workflow. The Create Batch workflow node creates a batch that uses an entity template and a batch lifecycle workflow. The optional Batch Template property of the Create Batch node can specify the batch sequence template that defines the entries in the batch list. The Create Batch Entry node specifies the batch entry type of a new or existing slot in a batch list and assigns an entity to the slot.



The [Create Batch Adhoc Workflow Node](#) (page 40) creates an empty batch with no batch entries. Ad hoc batches are based on an analysis rather than a batch template. By default, the ad hoc batch created has a class of Base. You can add entries to the batch list with Create Batch Entry nodes.

The Batch Workflow Login window lets you create a batch from a batch login workflow. On the List page, you can select the samples that are included in the batch list. If the batch is associated with a plate, you can see the layout of the batch list entries on the plate.

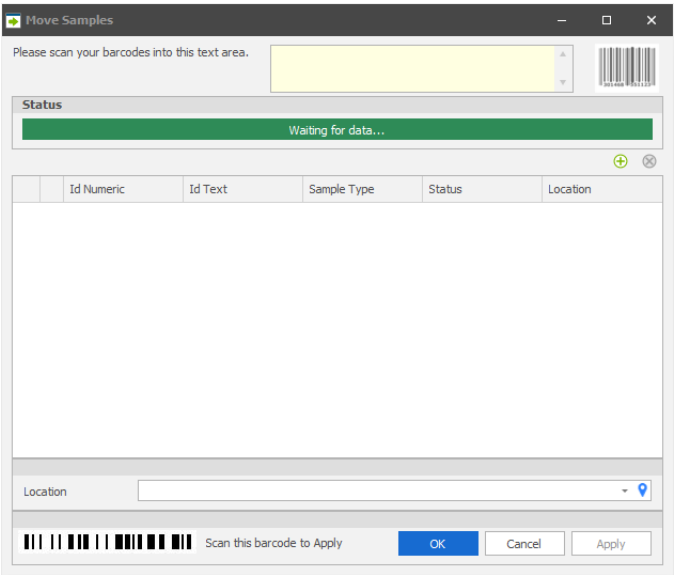


The original batch login mechanism, based on batch templates, is still available.

For more information, see the "Batch Management" chapter in the *SampleManager LIMS Reference Guide*.

Barcodes

Barcode functions let you use a barcode reader to interact with SampleManager. The default system includes options for processing plates and samples with barcodes. For example, you can use a barcode reader to enter the identity of samples for the Move Sample operation.



You can use the **Setup > Workflow > Event Types > Add Barcode Function** menu option to create custom master menu items that trigger workflow events and open windows that accept

input from a barcode reader. For more information, see the "Toolbars and Menus" chapter in the *SampleManager LIMS Configuration Guide*.

Requirement	Description
RQ-SMC-0000444	Increasing use of barcode readers

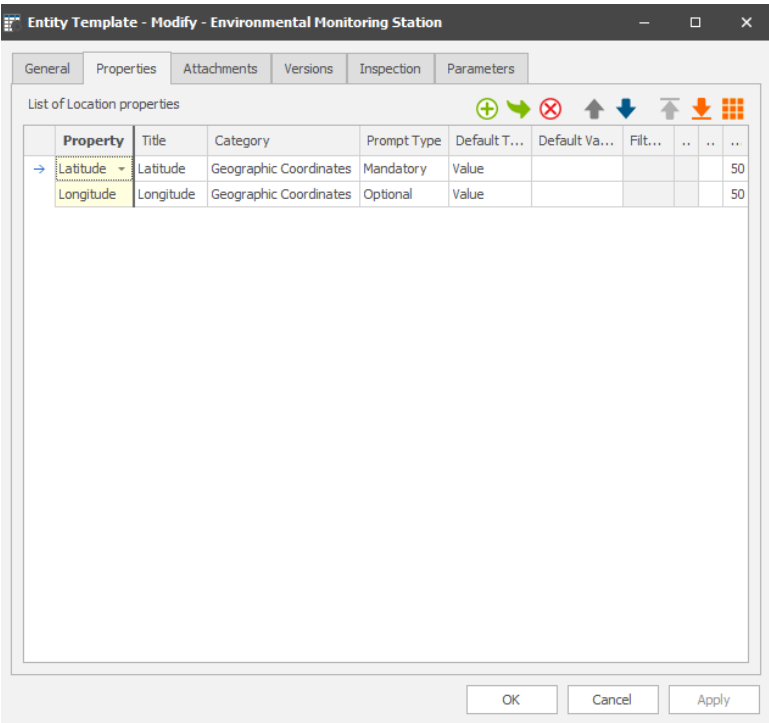
Entity Templates

The entity template functionality has been updated to support the new functionality in SampleManager 12.2.

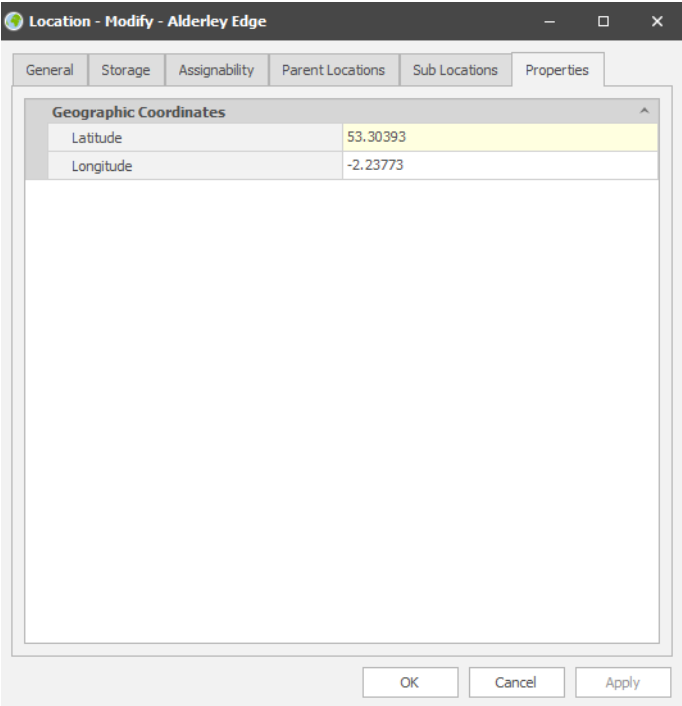
The new EntityTemplatePage form is a Generic Page Extension form that you can add to Property Sheet forms. This page shows properties listed on the Properties page of the entity template that created the entity and that do not appear on any other page of the entity property sheet. This feature lets you add extra properties to entity types without extending the property sheet form with custom pages.

Form Name	Entity Type	Description
☐ LabelTemplate	LABEL_TEMPLATE	Label Template Definition
☐ Language	LANGUAGE	Language property
☐ LimitCalculation	LIMIT_CALCULATION	Limit Calculation Property Sheet
☐ LimitPhraseHeader	LIMIT_PHRASE_HEADER	Limit Phrase Header Property Sheet
☐ LimsmlEntityAction	LIMSML_ENTITY_ACTION	LIMSML Entity Actions
☒ Location	LOCATION	Location
☐ LocationType	LOCATION_TYPE	Location Type
☐ LogSchedHeader	LOG_SCHED_HEADER	Login Schedule
☐ LotDetails	LOT_DETAILS	Lots : Lot Detail Property Sheet
☐ LotPropertySheet	LOT_DETAILS	Lot property sheet
☐ LotReconcile	LOT_DETAILS	Lots : Reconcile Inventory
☐ MasterMenu	MASTER_MENU	Master Menu
☐ MlpFamily	MLP_FAMILY_HEADER	MLP Family Property Sheet
☐ MlpHeader	MLP_HEADER	MLP Header Property Sheet
☐ MlpLevel	MLP_LEVEL	Mlp Level Property Sheet
☐ ModularReport	MODULAR_REPORT	Define modular reports
☐ ModularReportPropertySheet	MODULAR_REPORT	Modular report property sheet
☐ ParameterType	PARAMETER_TYPE	Parameter Type
☐ Personnel	PERSONNEL	Operators/Personnel Information
☐ PhraseHeader	PHRASE_HEADER	Phrase
☒ Plate	PLATE	Plate Property Sheet
☐ PlateAppearance	PLATE_APPEARANCE	Plate Appearance
☐ PlateFillOrder	PLATE_FILL_ORDER	Plate Fill Order

Add the extra properties to the entity template that you will use to create the entity.



When you open an entity based on the entity template, the Properties page is visible and shows all the properties included in the entity template that don't appear on any other page of the property sheet.



The Filter By column on the Properties page of the Entity Template lets you select multiple properties that will be used to filter the browse list for the current property. For example, in the Default Test entity template the Filter By value of the Instrument property is set to filter the Instrument browse list for the test by both Instrument Category and Instrument Template.

Entity Template - Modify - Default Test

General Properties Attachments Versions Inspection Parameters

List of Test properties

Property	Title	Prompt Type	Default Type	Default Value	Filter By	Criteria
→ ComponentList	Component List	Optional	Value			
InstrumentCategory	Instrument Category	Optional	Value			
InstrumentType	Instrument Type	Optional	Value		InstrumentCategory	
Instrument	Instrument	Optional	Value		InstrumentCategory, InstrumentType	
Starter	Starter	Optional	Value			
TestPriority	Test Priority	Optional	Value	1		
IsStandard	Std	Read Only	Value	☒		
LabMethod	Lab Method	Hidden	Assign Before ...	[Analysis.LabMet...]		LE_TEST_METHODS

OK Cancel Apply

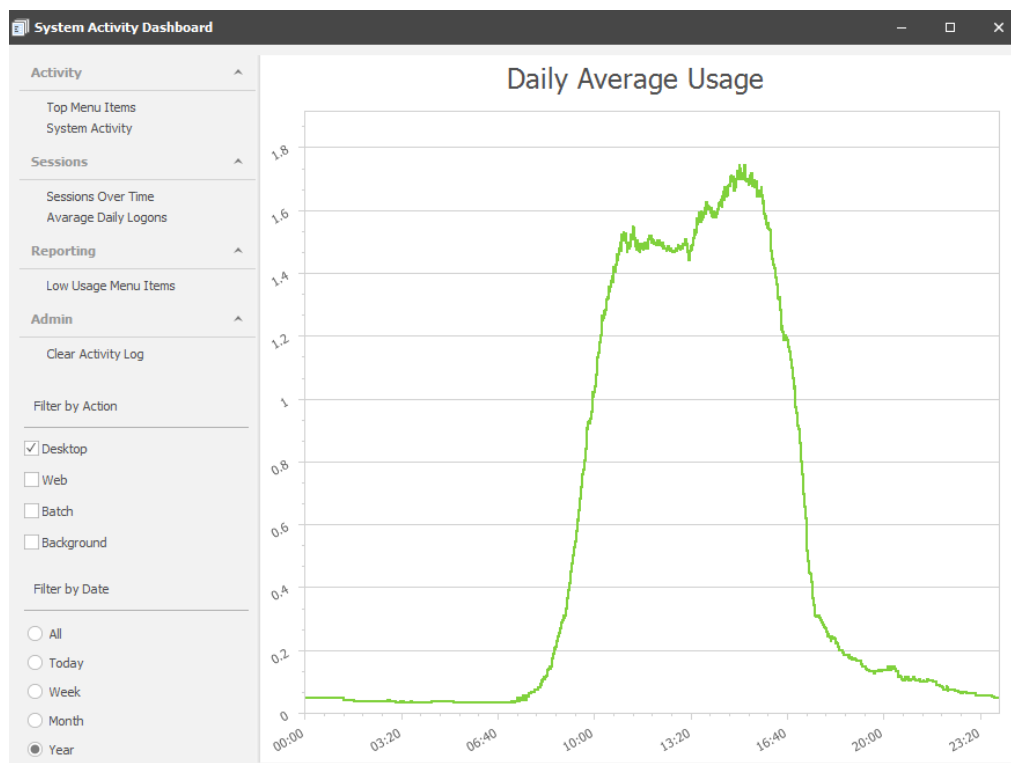
For more information, see the "Entity Templates" chapter in the *SampleManager LIMS Reference Guide*.

Menu Usage Metrics

If the ACTIVITY_LOG_ENABLED configuration item is set to Yes, SampleManager creates a record in the ACTIVITY_LOG table each time a user performs one of the following actions:

- Opens an explorer folder
- Calls a master menu option
- Generates a report from a pop-up menu
- Calls a workflow or workflow action from a pop-up menu

The System Activity Dashboard shows graphical summaries of information from the ACTIVITY_LOG and ACCESS_LOG tables. To open the System Activity Log, from the main menu, select Help > System Usage.



For more information, see "Toolbars and Menus" in the *SampleManager LIMS Configuration Guide*.

Requirement	Description
RQ-SMC-0000379	Menu Usage Metrics

Reports and Labels

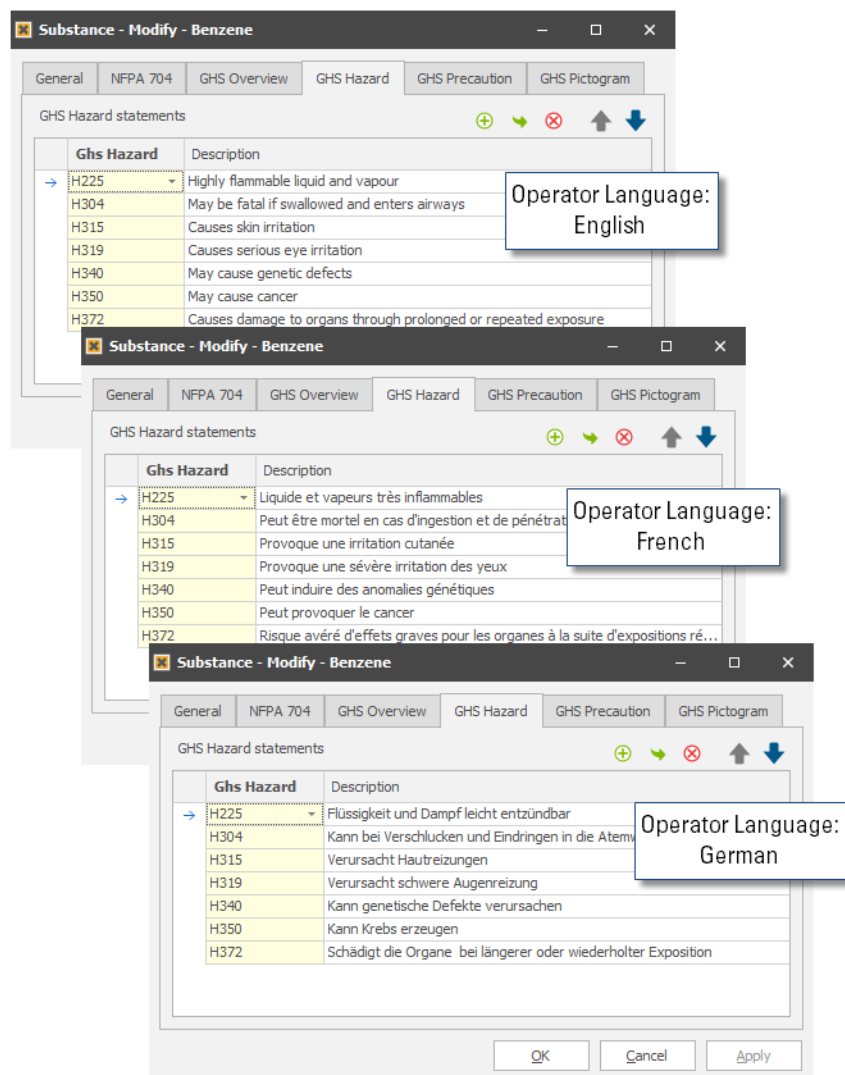
If you create a new SampleManager 12.2 instance, all explorer folders, configuration items, and menu options related to InfoMaker are not included. If an instance is upgraded from a previous version, the InfoMaker reporting mechanism is still available to support legacy reports. All reports supplied with SampleManager are generated by the Report Designer. For more information, see the *SampleManager LIMS System Administration Guide* and the *SampleManager LIMS Report Designer Help*.

New label templates are designed using the Report Designer. The new label specification entity type defines the physical characteristics of a type of label that you want to print on. The old combit List & Label application is available in upgraded instances for existing label templates. For more information, see the "Report Designer Reports and Labels" chapter in the *SampleManager LIMS System Administration Guide*.

Requirement	Description
RQ-SMC-0000457	Remove InfoMaker for new installations
RQ-SMC-0000458	Remove combit List & Label for new installations

Localization

If your SampleManager instance contains data written in multiple languages, you can translate the text that appears in specific text fields so that each user sees the text in their assigned language. In the following example, the text in the description field of each phrase entry in the GHS_HAZ phrase has English, French, and German translations. When operators open a substance that has one or more GHS hazard statements, they see the hazard statement descriptions in the language assigned to their personnel record.



For more information, see the "Localizing a SampleManager LIMS Instance" and "Customizing the Database Structure" chapters in the *SampleManager LIMS Configuration Guide*.

The SampleManager client software, SampleManager server software, and all associated applications now support UTF-8 Unicode character encoding. Data stored with Unicode encoding in the database is passed to the SampleManager client and shown as Unicode characters in the user interface.

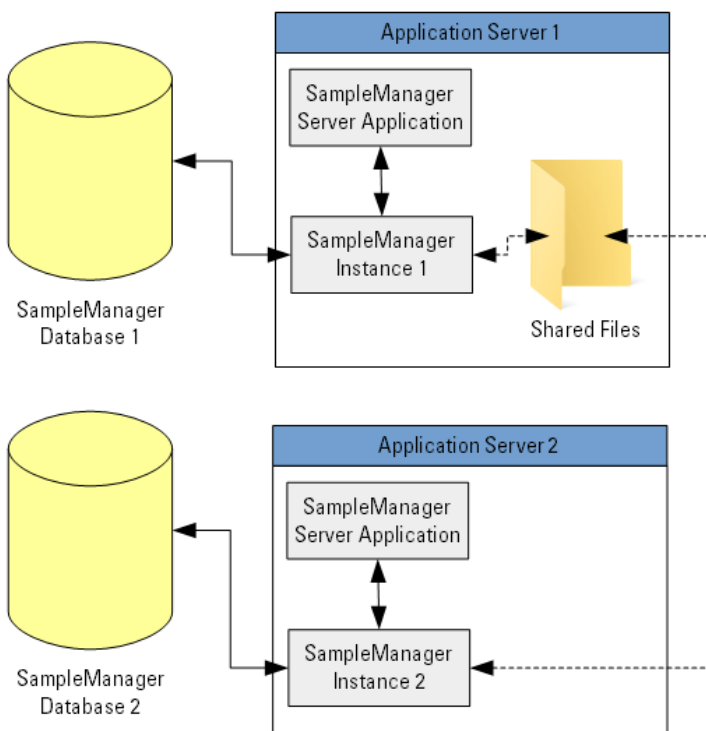
Requirement	Description
RQ-SMC-0000268	Ability to localize text data
RQ-SMC-0000346	SCR108616: Unicode

Multi-Site Deployment

SampleManager supports two mechanisms that allow you to segregate data associated with different locations or business units to simplify management of enterprise-wide LIMS implementations:

- Site instances
- Site entities

Site instances have a separate database, but share files such as report templates and VGL libraries with one or more other instances. For more information, see the "Installing SampleManager Server" chapters in the *SampleManager LIMS Installation Guide*.

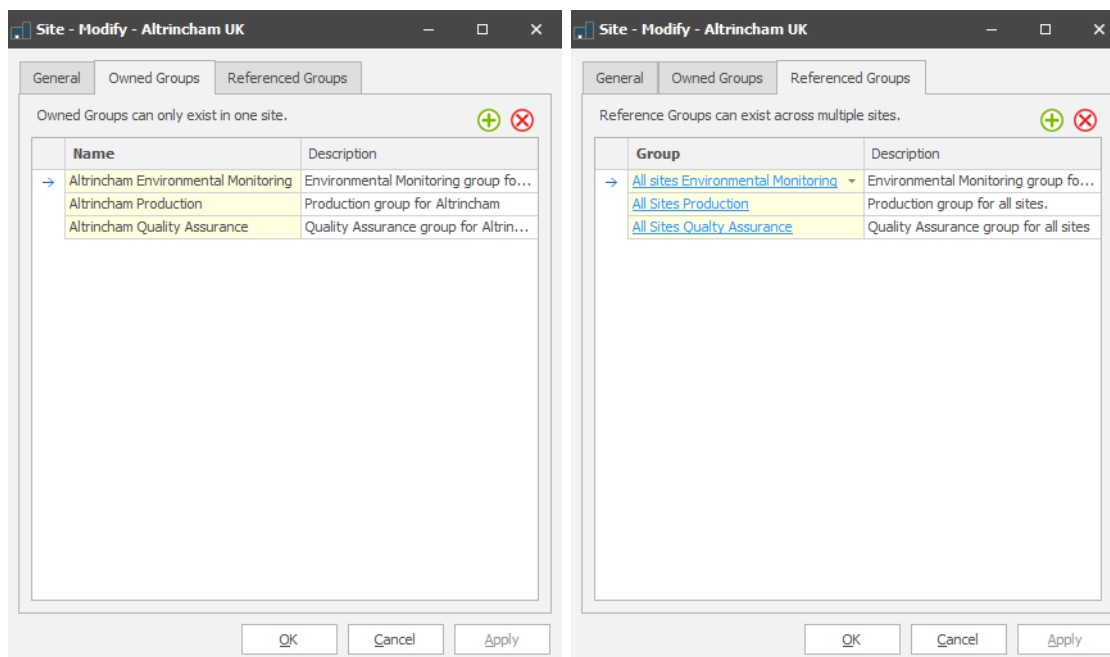


The site entity lets you identify data that belongs to a specific geographic location or business unit. SampleManager can export all the data associated with an individual site and create a SQL script that will delete all data that is exclusively associated with the site from the original database. You can use this feature to segregate data in your SampleManager database, so that the data that belongs to an individual location or business unit can be exported to a separate SampleManager instance if necessary in future.

The site entity has no effect on the group security mechanism that controls user access to data.

Each site entity is associated with one or more groups. There are two types of relationship between a site and a group:

- Owned groups identify the data that is exclusively used by that site. For example, if a site corresponds to a specific manufacturing plant, the instruments, sampling points, and locations in that manufacturing plant should belong to groups that are owned by the site.
- Referenced groups identify the data that is used by the site but that might be shared with other sites. For example, if a site corresponds to a specific manufacturing plant, the analyses, report templates, and instrument templates used in that manufacturing plant should belong to groups that are referenced by the site.



For more information, see the "Security" chapter in the *SampleManager LIMS System Administration Guide*.

Requirement	Description
RQ-SMC-0000351	Multi-Site Deployment Tool

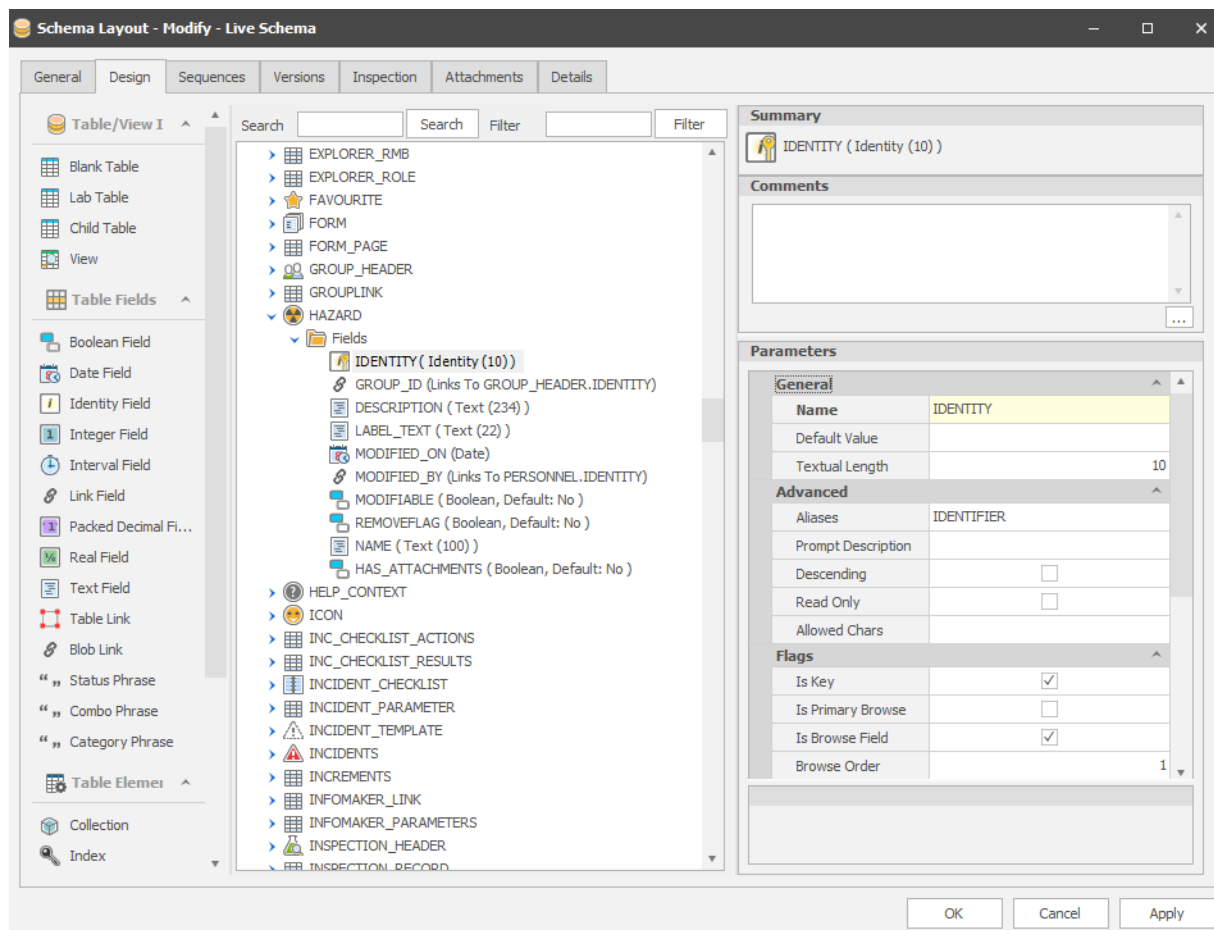
User Profiles

If an instance is configured to use domain authentication and the LOGIN_ALLOW_MULTI_PERSONNEL configuration item value is Yes, a single domain account can map to multiple records in the PERSONNEL table. This feature lets users who are responsible for configuration and development have multiple SampleManager operator profiles that all adhere to corporate password policy, but that have different role and group access for testing purposes. For more information, see the "Security" chapter in the *SampleManager LIMS System Administration Guide*.

Requirement	Description
RQ-SMC-0000367	User Profiles

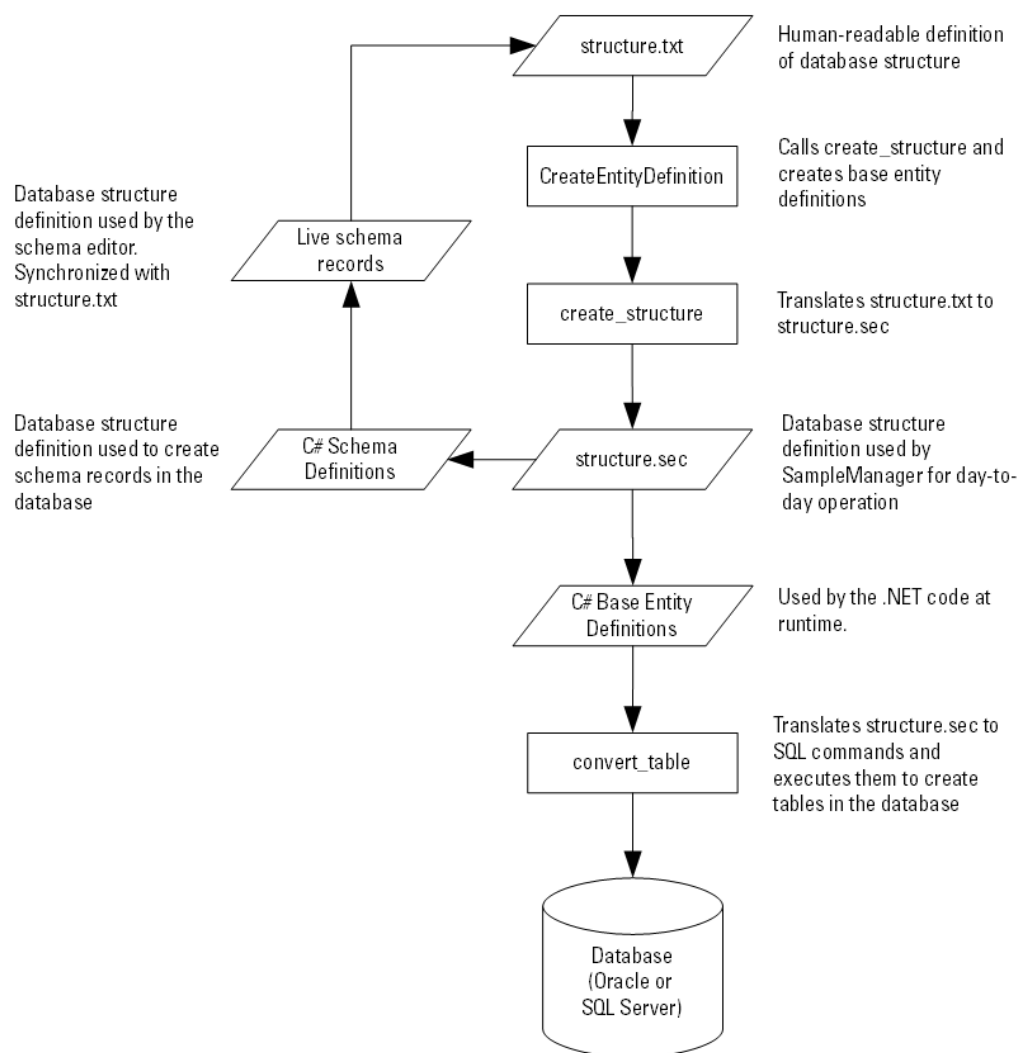
Schema Layouts

A schema layout defines a set of tables, indexes, views, and collections that are presented in a graphical user interface.



The active version of the Live Schema schema layout defines the current structure of the SampleManager database. The Live Schema schema layout is always synchronized with structure.txt:

- If you update and then commit the active version of Live Schema, SampleManager updates the structure.txt, structure.sec, and base entity definition classes to reflect your changes.
- If you update structure.txt and run the CreateEntityDefinition and Convert_Table to modify the database structure, SampleManager automatically updates the active version of the Live Schema schema layout to reflect your changes.



You can create schema layouts that are not implemented in the SampleManager database. For example, you can create a schema layout that contains a subset of tables that can be exported to an XML file and then imported into other SampleManager instances.

For more information, see the "Customizing the Database Structure" chapter in the *SampleManager LIMS Configuration Guide*.

Requirement	Description
RQ-SMC-0000334	UI Driven Database Management

Cyber-Security Enhancements

SampleManager has historically relied on being deployed within a closed-system environment for cyber-security. Newer deployment models have a more widely distributed architecture and as such, SampleManager needs to provide a more pro-active defense against cyber-attacks.

Passwords

SampleManager encrypts passwords using Cryptography API: Next Generation (CNG) <https://msdn.microsoft.com/en-us/library/aa376210.aspx>, which is validated to Federal Information Processing Standards (FIPS) 140-2. Passwords are transported securely and cannot be obtained by dumping the client memory. For more information, see the "Security" chapter in the *SampleManager LIMS System Administration Guide*.

The following new configuration items define extra rules for password complexity:

- **PSWD_MAX_CHAR_REPEAT** – Specifies the maximum number of consecutive repeated characters that are allowed in a password.
- **PSWD_REQ_LOWER** – If True, passwords must contain a lower case letter.
- **PSWD_REQ_NUMBER** – If True, passwords must contain a digit.
- **PSWD_REQ_SPECIAL** – If True, passwords must contain a character that is not a either a letter or a digit.
- **PSWD_REQ_UPPER** – If True, passwords must contain an upper case letter.
- **PSWD_REUSE** – Specifies the number of password changes required before a password can be reused.

For more information, see the "Electronic Signatures" chapter in the *SampleManager LIMS System Administration Guide*.

If you upgrade a SampleManager instance, users will be forced to change their passwords the first time that they log in. For more information, see the "Upgrading SampleManager" chapter in the *SampleManager LIMS Installation Guide*.

Requirement	Description
RQ-SMC-0000338	Hold password securely in memory so that dumping the process will not reveal it in plain text.
RQ-SMC-0000340	Extend the password complexity rules

Secure Connection Information

You can use the following configuration items to prevent SampleManager from showing server connection information in the user interface:

- **SECURE_EXCEPTION_STACK** determines how much information appears in SampleManager error messages. If it is set to Yes, error messages contain minimal information.
- **SECURE_LOCK_INFO** determines how much information appears in the lock message that appears when a user attempts to edit a record locked by another user. If it is set to Yes, lock messages contain minimal information.
- **SECURE_SERVER_SETUP** determines how much information appears in the Manage Servers window. If it is set to Yes, connection information is hidden and you cannot edit or copy server information.

For more information, see the "Security" chapter in the *SampleManager LIMS System Administration Guide*.

Server information is stored in the servers.xml file. The first time a SampleManager client reads servers.xml, the file is encrypted. For more information, see the "Installing SampleManager Client" chapter in the *SampleManager LIMS Installation Guide*.

Requirement	Description
RQ-SMC-0000341	Expose less information in the lock message
RQ-SMC-0000342	Disable the ability to view connection setup information in the application
RQ-SMC-0000343	Change servers.xml so it's no longer clear text
RQ-SMC-0000441	Remove the exposure of stack dump information within the client.

SMW connection daemon handshake

If a SampleManager daemon service associated with an instance receives an invalid connection attempt, it rejects the request and records an entry in the appropriate log file.

For more information, see the "Operating Environment" chapter in the *SampleManager LIMS System Administration Guide*.

Requirement	Description
RQ-SMC-0000381	SMW connection daemon handshake

Chromeleon Link

The Chromeleon Link AddIn has been replaced by new functions in the SampleManager Chromeleon Interface AddIn. The SampleManager Chromeleon Interface must be installed on each Chromeleon CDS client workstation. It adds the following features to Chromeleon CDS:

- Instrument Ready Check – Obtain information from SampleManager LIMS to check that the user is allowed to run a specific sequence and that the instrument is available for use. This feature was available in the SampleManager 12.1 version of the SampleManager Chromeleon Interface.
- eWorkflow Batch Selection – Get individual SampleManager LIMS tests and add them to an eWorkflow sequence in Chromeleon CDS. In the SampleManager 12.1 version of the SampleManager Chromeleon Interface, you could select a SampleManager LIMS batch sequence and add all its tests to an eWorkflow sequence.
- Sequence Ready to Send to LIMS – Configure when a Chromeleon CDS sequence is ready to be transferred to SampleManager LIMS. This feature was available in the SampleManager 12.1 version of the SampleManager Chromeleon Interface.
- Send Results to SampleManager LIMS – Send sequence results or individual injection results to SampleManager LIMS.

You can select which features are installed during the installation process.

For more information about the installing the SampleManager Chromeleon Interface, see "Installing Chromeleon Link Components" in the *SampleManager Installation Guide*. For more information about using Chromeleon Link, see the "Chromeleon Link" chapter in the *SampleManager LIMS Configuration Guide*.

Requirement	Description
RQ-SMC-0000439	Rewrite Chromeleon Link Add-in for result entry and get injection

Data Manager

The SampleManager entity types that support the Data Manager functionality are included in the core SampleManager Server installation. The Data Manager functionality lets you store, retrieve, and view data created by external applications, such as instrument control software. When the Data Manager functionality stores data, it packages all the original files associated with a data set into a single zip file that is stored in a specified location on the Data Manager server. During the packaging process, Data Manager can convert the original data into Generalized Analytical Markup Language (GAML), a neutral format that offers long-term data preservation independent of the original instrument software.

You can configure Data Manager to extract information from the data during the conversion process. The extracted information is stored as metadata linked to the data package, which you can use to search archived data in future.

For more information about the Data Manager functionality, see the Data Manager chapters in the *SampleManager LIMS Configuration Guide*.

The Data Manager functionality also requires a set of Windows services and supporting applications, such as file converters, which must be installed separately on the appropriate machines in your SampleManager system. For more information about installing these components, see the "Installing Data Manager Components" chapter in the *SampleManager LIMS Installation Guide*.

The following new workflow types support the Data Manager functionality:

- Data package workflow – Defines the behavior of a data package created by the Data Manager functionality. A data package represents a collection of data obtained from an external application, for example data files from an instrument control system.
- Data item workflow – Defines the behavior of a data item created by the Data Manager functionality. A data item represents a single item in a data package, for example a raw data file from an instrument control system.

For more information about these workflow types, see the "Workflows" chapter in the *SampleManager LIMS Reference Guide*.

The Get Data Item Contents workflow node gets the contents of a raw file or neutral file from a data item and passes it to its child nodes for processing. This node is available in Data Package workflows and Data Item workflows. For more information about this node, see the "Workflow Nodes" chapter in the *SampleManager LIMS Reference Guide*.

Requirement	Description
RQ-SMC-0000414	Automated instrument integration within SampleManager core
RQ-SMC-0000431	Installation and upgrade kits

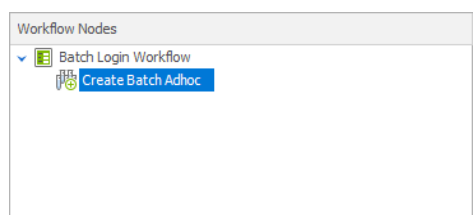
Documentation Amendments and Additions

This section contains additional information and corrections that will appear in the next release of the SampleManager LIMS documentation set.

Create Batch Adhoc Workflow Node

The Create Batch Adhoc node creates an empty batch with no batch entries. Ad hoc batches are based on an analysis rather than a batch template. By default, the ad hoc batch created has a class of Base.

In the following example, the node is used to create an ad hoc batch in a batch login workflow.



Parameter	Description
Template	The entity template to use to create the batch. You can select an entity template associated with the BATCH_HEADER table. This property is mandatory.
Lifecycle	The batch lifecycle assigned to batches created by this workflow. This property is mandatory.
Identity	The formula used to generate the batch Id. By default, the formula used is "[TemplateId.Identity] + IncrementPadded('BATCH', [TemplateId.Identity],6)".
Analysis	The analysis used to create tests for the samples in the batch.
Criteria	The criteria used to filter the available samples.

Disabling Translation of Text Fields in C# Tasks

In normal operation, if a text field is defined as translatable in the database and a translated field value exists for the language assigned to the current operator, SampleManager provides the translated value for that field.

In some circumstances, it might be necessary to temporarily disable the text field translation feature. The following code pattern disables the translation feature and then re-enables it:

```
Schema.Current.DisableTranslations();
```

```
try
{
    //Your custom code
}
finally
{
    Schema.Current.EnableTranslations();
}
```

Valid Storage Types for Locations and Location Types

The following entity types are valid entries in the Storage Type property of Locations and Location Types:

- PLATE
- STOCK_BATCH

It is not possible to track or limit the inventory of samples stored at a location.

Read Results from Instrument in Web Client

In the SampleManager web client, the Read Instrument button is available in the Result Entry window. In the web client, you can read results from instruments connected through one of the following types of data source:

- Emulated
- Serial Port
- Directory
- Web Request
- File Prompt

In the web client, the read result from instrument feature will not work for instruments that are connected through a COM port, or through a Local Serial Port data source.

Stability VGL Desupport

The Thermo Scientific™ SampleManager Stability™ module supersedes the Thermo Scientific™ SampleManager Stability™ (VGL) module, and these two separate modules can be installed alongside each other in the same instance.

The planned desupport date for SampleManager Stability (VGL) versions 11.0 and 12.0 is 15 February 2020. After this date, software modifications or enhancements for this module might not be provided. However, customers with maintenance contracts can still contact Technical Support for assistance consistent with our Commercially Reasonable Best Effort Support policies.

We recommend that you run existing studies to completion in the SampleManager Stability (VGL) module, but create future studies in the SampleManager Stability module. Stability studies and associated data created in the VGL module are not compatible with the newer Stability module.

Fixed Issues

The following table details the software issues that have been corrected in this product release.

Issue ID	Summary
NA	

Issues and Enhancement Requests Addressed by New and Refactored Features

The following table details the software issues and enhancement requests that have been addressed by new or refactored features in this project.

Issue ID	Summary	Addressed by Requirement
SCR46031	Enhancement request for graphical interface to create and modify stucture.txt.	RQ-SMC-0000334 See Schema Layouts (page 34).
SCR108616	Enhancement request for Unicode character set support	RQ-SMC-0000346 See Localization (page 31).
SCR110598	Enhancement request to implement a password history mechanism for use with SampleManager native authentication	RQ-SMC-0000340 See Passwords (page 36).
SCR115692	If using SampleManager passwords for authentication, SM only takes the first 10 characters of the password.	RQ-SMC-0000340 See Passwords (page 36).
SCR116296	Passwords which contain 8-bit characters like letters with accent are not accepted by SampleManager	RQ-SMC-0000340 See Passwords (page 36).
SCR118653	Enhancement request to complete multiple calibration samples for an instrument under calibration.	RQ-SMC-0000314 See Instruments (page 15)
SCR120551	Enhancement request to be able to change the length of the cryptpass identity field.	RQ-SMC-0000340 See Passwords (page 36).
SCR122257	Issue with approving an MLP specification version after it has already been inspected with a rejection.	RQ-SMC-0000113 See Multi Level Product Specifications (MLPs) (page 14)
SCR122619	If components have Chinese names, sample status does not change to complete when results are entered. Only if using English SQL Server db and application server with a Chinese Client machine.	RQ-SMC-0000346 See Localization (page 31).

Issue ID	Summary	Addressed by Requirement
SCR122632	Missing Data Store folder in the SampleManager instance so unable to test Data Sources.	RQ-SMC-0000431 See Data Manager (page 38).

Known Issues

There are no known Priority 1 or Priority 2 issues identified within this product version as of 29 March 2019.

Any other known issues, Knowledge Base articles, and workaround details may be obtained via the Thermo Scientific Informatics Support Portal by using the following link:

<https://support.thermoinformatics.com/>. You must have a valid and current support contract in order to access this information.

Note: There may be known issues found in previously released versions that have yet to be given a Priority value. However, none of these were previously classified as Severity 5 or high impact Severity 4.

Database Changes

This section indicates whether or not changes were made to the database structure as a result of the enhancements and/or issue resolution included in this release.

Yes, changes were made ☒

No, changes were not made ☐

Not applicable ☐

The enhancements and defect fixes included in this release required extensive changes to the database structure. To see the full changes in detail, use a file comparison tool to view the difference between the structure.txt file provided with SampleManager 12.2 and the default structure.txt file for your current version.

For more information, see the "Upgrading SampleManager" chapter of the *SampleManager LIMS Installation Guide*.