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Product Spotlight

Ease of Administration

Introduction

System administration can pose a significant challenge for an enterprise Chromatography Data System (CDS) as it often entails numerous processes and tasks covering both IT and the laboratory. Regular system maintenance for both servers and local computer stations is usually managed by IT and can include operating system updates, antivirus software updates, creating backups for disaster recovery, application updates, and so on. Performing these actions manually on each local station, can present a considerable logistical challenge and be a very time-consuming process.

Thermo Scientific[™] Chromeleon[™] CDS provides a central location in a single application that streamlines the performance of daily tasks, updates/upgrades, and routine maintenance using automated features designed to save valuable time, increase productivity and ensure business continuity. More importantly the administration application can be accessed from any station within the Chromeleon Domain (Figure 1), providing the user has the necessary privilege to do so. This gives the end-user peace of mind and confidence that access is secure and controlled.



Figure 1. Remote administration from anywhere





Reduced management effort with total flexibility

By using a single administration application, Chromeleon CDS enables access from outside the lab, across the lab, different sites and even multiple geographies. This means administrators do not have to be in front of specific computers or servers, resulting in less travel and more time to concentrate on other business activities. It also allows devolution of admin tasks across the business.

With Chromeleon software's modular architecture, expansion is straightforward and capacity can be added whenever and wherever needed, for example, file or database storage. All such activities are comprehensively documented in the administrative audit-trail that also covers User Management, Global Policies, Domain Resources and Data Vault (Database) configuration, to meet the requirements for compliance and data integrity.

The Chromeleon Administration Console (Figure 2) is the single point of system administration.

Components of the central administration console Licence manager

Viewing, assigning, distributing, activating and updating licences is made simple with a clear layout making the process straightforward and less time consuming. Get the full picture of which licences are in use and which are available and make an assessment on licence utilization (Figure 3).



Figure 2. Content of centralized administration console

License Manager (localhost)	Feature	Total	Granted	In Use	Available
Client Licenses Instrument Controller Licenses	Client Licenses				
License Overview	Data Client	5	0	0	5
Scheduler	Instrument Operation	5	0	0	5
💆 Global Policies	Compliance Tools	5	0	0	5
User Database	Report Designer Pro	5	0	0	5 5
eWorkflow Tags	Virtual Column Basic	5	0	0	
🚼 Audit Trail 🦚 Domain Resources	Virtual Column Complete	5	0	0	5
Local Machine	SDK Runtime	0	0	0	0
- cood indonino	Standard Instrument Integration	0	0	0	0
	Non-targeted MS Data Processing	5	1	0	4
	Chromeleon XPS	nromeleon XPS 30	0	0	30
	Intact Protein Deconvolution	5	1	0	4
	Chromeleon Process Analyzer	5	0	0	5
	Instrument Controller License	5			
	Instrument Controller	5	1	1	4
	Instrument Class 1	30	2	2	28
	Instrument Class 2	30	0	0	30
	Instrument Class 3	10	2	2	8
	3D Data Acquisition	5	1	1	4
	SQ / QqQ GC-MS Data Acquisition	n 5	0	0	5
	LC-MS Data Acquisition	5	0	0	5
	Fraction Collection	5	0	0	5

Figure 3. Licence Overview for utilization

Scheduler

Enables system organization (Figure 4), where administrators can automatically move data, between Data Vaults, for example, for archiving purposes. Tasks define how the data is handled, the storage location and naming convention, thereby removing the need for external IT applications.

Global policies

This allows for modification of general, top level Chromeleon CDS settings that affect all parts of the software — an example of easy administration that delivers efficient system use (Figure 5).

Organizational (org) units

The management of larger installations is made much easier and administration is simplified, which delivers segregation and reflects geographical or preferred business structure. Implementing Org Units enables administration on a per site basis while regaining central control, which provides the option to group resources such as Data Vaults, users or Instrument Controllers into units that have their own User Manager Database with its own User Manager (Figure 6).

Chromeleon Administration Console (I-GMR0FH2 Tasks)					
Scheduler		Enabled	Task Name	Status	Next Start	Previous Start	Resu	ilt
Scheduler (Chromeleon Domain)		1	Archive Data >24 Months	Waiting	22-Sep-20 17:41:45 PM +01:00			
Global Policies	¥ 🕨	Z	Cleanup cached network sequences	Waiting	22-Aug-20 10:57:05 AM +01:00	21-Aug-20 10:57:04 AM +01:00	ок	
User Database Workflow Tags Workflow Tags Reduct Trai Domain Resources Local Machine								
heduler (Chromeleon Domain)							System	n Admi

Figure 4. The Scheduler provides automated system organization

License Manager (localhost) License Manager (localhost) License Manager (localhost) Global Policies	🗄 🔜 Save Policies 📓 Report 👯 Audit Trail	Ø
Cucola rolles Cucoda rolles eWorkflow Tags Audt Trail Cucoda Resources Local Machine	List of policies: User Mode Host Name Resolution Multi-User Logon Multi-User Logon Multi-User Logon Multi-User Logon Multi-User Logon Multi-User Logon Multi-User Logon Multi-User Logon Multi-User Logon When a user logs on, lock all other client sessions Station Audit	sion concurrently
Global Policies	s	ystem Admin

Figure 5. Global polices: Example shown defines the Multi-User Logon feature – straightforward and easy to implement



Figure 6. Implementing Organization (Org) Units to segregate user management

User database

This node provides easy definition of users, roles (Figure 7), privileges and controls access to specific data locations, such as folders or Data Vaults. The Chromeleon User Database provides simplified user management, backed by a dedicated audit trail recording user actions, such as logon and logoff events and modifications to user profiles, like changes to privileges that define what actions users can perform from within the software platform (Figure 8). These processes increase flexibility without comprising security.

icense Manager (localhost) Scheduler	😗 Create New Role 🗙	Delete Role(s) 🔛 Report				
Global Policies	Drag a column header h	ere to group by that column.				
Uher Database Uher Database Policies Strometeon Ukers Database Policies Local Machine	Name	Description	Logon Role	Licenses	Privilege Membe Count Coun	
	X					
Domain Resources	Full Access		Yes	Compliance Tools, Data Client, Instrument Operation, Intact Protein Deconvolution, Non-targeted MS Data Processing, Report	183	
	Security		Yes	Compliance Tools, Data Client	48	
	Lab Director	Laboratory Director	Yes	Compliance Tools, Data Client, Instrument Operation, Report Designer Pro	170	
	T Admin	IT Administrator	Yes	Compliance Tools, Data Client	35	
	Supervisor	Laboratory Supervisor	Yes	Compliance Tools, Data Client, Instrument Operation, Report Designer Pro	151	
	QAQC	Quality Assurance Quality Control	Yes	Compliance Tools, Data Client	15	
	Technician	Laboratory Technician	Yes	Compliance Tools, Data Client, Instrument Operation, Intact Protein Deconvolution, Non-targeted MS Data Processing, Report	71	
	Analyst	Lab Analyst	Yes	Compliance Tools, Data Client, Instrument Operation	139	
	4					

Figure 7. User Roles defined in Chromeleon CDS

License Manager (localhost) Scheduler Global Policies	General Logon Members Licenses	
User Database User Database User Database User Database User Strabse	Role Name: Analyst Role Description:	The role name must have 1 to 32 characters and must not contain quotes or single quotes.
	Lab Analyst Privileges:	Al None
IT Admin	Privilege Iv Ø Instrument Configuration D I Befanel D III Bestrument Method IV Ø Daily Instrument Audit Trails III Instrument Control Ø Take Over Instrument Ville. Control Restrument C. Ø Control Queue Ø Control Restrument Ville. Change Performance L. Change Qualification Int. Override Qualification	Execute control commands for direct control of instruments. Enforce taking over control of an instrument that is currently controlled by another user. Modify the queue (add, move or remove sequences), start or stop the queue. Execute control commands for direct control of instruments while queue is running. Change warring limits and absolute limits for device/module counters.

Figure 8. Privileges that outline user actions within the software

Domain resources

With a focus on IT administration and its associated features, the Domain Resources node allows accessibility to all Chromeleon Consoles, computers, instruments, Data Vaults, and system printers currently registered with the Chromeleon Domain Controller (Figure 9).

A resources overview displays a summary of the domain resources, which enables an information rich view of the system status and its associated components (Figure 10), saving time and delivering operational efficiency.

Instrument configuration

The Administration Console enables instrument setup and modification via the Instrument Configuration Manager (Figure 11) from anywhere in the Chromeleon Domain, removing the need to be in front of the actual PC for most operations. It allows modifying parameters, configuring new modules or verifying correct installation with access to a configuration check and instrument controller message window for live updates.



Figure 9. Domain Resource categories

License Manager (ocalhost) Scheduler			Audit Trail 🍓	Manage Data Vaults	iff Sh	ow Vault Proper	ties 🗐 C	onfigure Instrur	nent 🖉 Co	nfigure Instrume	nt Controller 🎯 Add	System I	Printer		× Remov
Global Policies	100	All Resources													
User Database eWorkflow Taos	0	Irag a column header h	ere to group by the	at column.											
Audit Trail Domain Resources		Type -	Computer	Name	Online	Last Refresh	Org. Unit	User Name	Version	Access Control	Running Sequence	Schema	Is Multi-User	Versioning	Privileged Actions
Al Resources	X														
Computers Data Vaults	3	Data Vault	ukhem-gmr0fh2	Training	True	0 day(s) 00:26	<global></global>	n.a.	7.3.0.60919	False	n.a.	7.3.0.28	False	Enabled	Disabled
Instruments	v 4	Data Vault	ukhem-gmr0fh2	ChromeleonLocal	True	0 day(s) 00:26	<global></global>	n.a.	7.3.0.60919	False	n.a.	7.3.0.28	False	Enabled	Enabled
Chromeleon Consoles	5	Data Vault	ukhem-gmr0fh2	PeteDV	True	0 day(s) 00.26	<global></global>	n.a.	7.3.0.60919	False	n.a.	7.3.0.28	False	Enabled	Disabled
cal Machine	Å 6	Data Vault	ukhem-gmr0fh2	CM_DV_1	True	0 day(s) 00.26	<global></global>	n.a.	7.3.0.60919	False	n.a.	7.3.0.28	False	Enabled	Disabled
	7	Data Vault Service	ukhem-gmr0fh2	UKHEM-GMR0FH2	True	0 day(s) 00:26	<global></global>	n.a.	7.3.0.60919	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	8	Instrument	ukhem-gmr0fh2	Ultimate_3000	True	0 day(s) 00.01	<global></global>		7.3.0.60919	False		n.a.	n.a.	n.a.	n.a.
	9	Instrument	ukhem-gmr0fh2	Alliance	True	0 day(s) 00.01	<global></global>		7.3.0.60919	False		n.a.	n.a.	n.a.	n.a.
	10	Instrument	ukhem-gmr0fh2	Vanquish_Core	True	0 day(s) 00.01	<global></global>	System Admin	7.3.0.60919		chrom://ukhem- omr0fh2/Chromeleon	n.a.	n.a.	n.a.	n.a.
	11	Instrument	ukhem-gmr0fh2	1260	True	0 day(s) 00.01	<global></global>		7.3.0.60919	False		n.a.	n.a.	n.a.	n.a.
						11									

Figure 10. Domain Resources Overview

File Edit View Controller Help		
• 🖪 X 🖻 🖻 🔋 🗷 🗷 😡 🖋 📉 🛡 🐻 👘		
UKHEM-GMR0FH2 Check instrum	ent controller configuration Messages Instrument Controller UKHEM-GMR0FH2 [Expert]	
 B ⊕ URimate_2000 B ⊕ Vanquich_Core C ↓ Allance B ⊕ 1260 	mt17:14:2 [ColumnComp PrehtBigh] ColumnComp PrehtBight TampOt + On mt7:14:2 [ColumnComp PrehtBight] ColumnComp PrehtBight TampOt + On mt7:14:2 [ManAbdal Funn] PumpHodule Pump Motor + On mt7:14:2 [ManAbdal Funn] PumpHodule Pump State 11:10.05018. © Copright 2009-2020 Thermo Fahre Scientific Inc. All rights reserved. mt7:14:2 [ManAbdal Funn] Sourced. mt7:11:11:12 [ManA Company State State 11:10.05019. © Copright 2009-2020 Thermo Fahre Scientific Inc. All rights reserved. mt7:11:11:12 [ManA Company State State 11:10.05019. © Company	

Figure 11. Chromeleon Instrument Configuration Manager

Remote systems management

Centralized system maintenance can be scheduled for convenience (Figure 12) and defined for each Chromeleon Client, instrument controller PC (IPC) or Thermo Scientific[™] 247 Instrument Controller. Options include the ability to apply settings to single or multiple computers, sequence/injection queue handling to ensure that the system is not running, with user notifications and warnings displayed in the Console and Studio. This minimizes system downtime, avoids conflicts of application use and enables smooth laboratory operation.

Automated software deployment is managed through a centralized distribution and updating tool (Figure 13). Updater packages can be centrally created for any update (not just the CDS application) and distributed regionally (in a controlled manner to maintain network bandwidth) to the local computers ready for installation. Chromeleon CDS updates can then be automatically installed for one, groups, or all computers at the predetermined time providing controlled, automated deployment.

It is also possible to run and manage Install Qualification (IQ) on remote devices and view the associated reports from the Administration Console (Figure 14). This can save significant time and reduces the need of having to be at every Chromeleon Station.



Figure 12. Maintenance Window with options for notifications and sequence handling





Figure 14. IQ available on remote devices

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Local machine

The Discovery Service is a critical component that maintains a central index of all available resources in the Chromeleon Domain (Figure 15), such as instruments or Data Vaults. Changes are automatically published to all Chromeleon Stations which also drastically simplifies deployment - simply connect a new station to the Discovery Service and all license, user and domain settings are automatically configured. This ensures fast, accurate connection of computers to the Chromeleon Domain and is a great example of ease of administration provided by Chromeleon CDS.



Figure 15. Configure Discovery - a simple process to deliver system changes

Conclusion

Chromeleon CDS delivers ease of administration that's accessible from anywhere for both IT and the lab with centralized administration of all core admin tasks minimizing downtime, and streamlining operations with both security and reassurance for the end-user.

Find out more at **thermofisher.com/chromeleon**

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