10 COMMON QUESTIONS ABOUT UPGRADING CHROMATOGRAPHY DATA MANAGEMENT SYSTEMS

Laboratory instruments are like any other technology: It is normal for them to fall out of support and eventually be retired. An instrument's computer hardware may become antiquated, or the software running an instrument gets updated and becomes unsupported.

Upgrading systems ensures they remain compatible with the current state of the industry. Upgrades can provide new features and functionality, and they can address data security vulnerabilities that happen over time.

Practical challenges come with the benefits of upgrading frequently used instruments, such as chromatography equipment. Lab managers have to choose an

To ensure maximum performance and productivity, it's important to upgrade your lab's chromatography data systems.

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upgrade approach, collaborate with their organization's IT department, and manage regular lab operations during the transition.

Read on for answers to 10 common questions about the process of a chromatography data system (CDS) upgrade.

1. WHAT ARE THE OPTIONS FOR CONFIGURING A CDS?

Stand-alone workstations can control up to four analytical instruments in the same room. They are easy to set up and run in the lab, but data security depends on maintaining individual computers. Workstations also limit efficiency because users spend time copying methods between stations as needed.

A networked, or distributed, system controls multiple instruments in different places. Such systems provide secure storage and a single place for all methods and data to reside. Although this approach is more expensive to implement than stand-alone workstations, it offers features that can make it easier to manage your chromatography data system across a larger lab or site.

2. WHAT ARE THE ADVANTAGES OF UPGRADING TO A DISTRIBUTED PLATFORM?

With a distributed system, users can access lab-wide views of all instruments and their status, as opposed to just those instruments connected to the workstation currently in use. This invaluable insight allows labs to improve turnaround time and promptly resolve potential issues.

Centralized system management introduces the convenience of being able to load and process results from any instrument on the system rather than being stuck in front of a workstation in the lab. Adding new instruments and users is as simple as installing a new computer onto the system's network, making it easier and more efficient to scale your lab's productivity. Finally, built-in backup and restore utilities facilitate disaster recovery.

To create a distributed CDS for your lab, Agilent offers data management software solutions such as OpenLab ECM or OpenLab ECM XT. In addition to centralizing operations of instruments at multiple sites locally, regionally, or across the globe, this software provides file versioning, access control, and audit trails, which are data integrity features that allow labs to operate in compliant environments.

3. WHAT ARE COMMON GROWING PAINS WHEN UPGRADING FROM A WORKSTATION TO A DISTRIBUTED SYSTEM?

Operating a distributed system requires different workflows than those used for freestanding workstations. Using a distributed CDS could involve new steps, including e-signatures, archiving files, locking files, or checking files out on your content management system.

Distributed systems also come with the responsibility of maintaining a database. Many entries are going to be added to your database throughout the normal use

of the system. Regular maintenance tasks need to be performed for the continued smooth performance of your system.

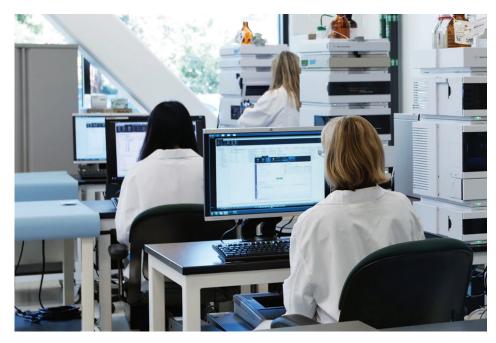## 4. CAN I USE CLOUD COMPUTING TO RUN A DISTRIBUTED SYSTEM OR STORE ITS DATA?

File storage and software deployment in the cloud is becoming increasingly popular, as it eliminates the need for an organization to either purchase or manage physical server hardware. Cloud computing also allows labs to dynamically scale their systems to meet demand.

OpenLab ECM XT offers the options of configuring data storage or deploying the software in the cloud. Data storage in the cloud includes access to a cloud provider's security features. Moving a central server into the cloud can help reduce management and hardware costs since there is no longer need for a physical server. When using cloud storage, you pay only for the computing resources you need, so you can easily scale up as your lab grows.

5. HOW LONG DOES A LAB-WIDE UPGRADE TYPICALLY TAKE?

Many factors can impact the timeline of a lab-wide upgrade, including the size of your system and the type of upgrade. Upgrading an existing CDS platform to a newer version would be faster than migrating to a new CDS platform, for example. The availability of resources, for both a user and an instrument's services team, is also a consideration.

On the organizational side, coordinating with IT and lab management to purchase server hardware or replacing existing hardware to make it compatible with the

A cloud-connected data system can enable a lab that is more scalable, easier to oversee, and more productive.

Credit: Agilent

minimum requirements of the upgrade is part of the planning process. Validation after installation completes the process on the services side.

Including the entire planning process, a lab-wide upgrade can take at least a few months.

6. WHEN UPGRADING TO A DISTRIBUTED CDS, WHICH STEPS ARE THE MOST TIME CONSUMING?

There are many moving parts in establishing a distributed CDS.

First, it is necessary to verify that instruments in your lab are compatible with the new CDS that you're upgrading to. Based on the age of the instrument, firmware or board updates might be required. If the instrument is very old, you might need to consider replacing or interfacing it to your new software with an analog-to-digital converter to acquire data from it.

Depending on the size of your lab's current system, migrating existing data could take days because of network bandwidth and input-output limitations. In some cases, tools, such as Agilent's EZChrom migration tool, can speed up the migration process via an easy-to-use user interface.

Once all files have been migrated to the new CDS, the customer's methods and data must be validated. Validation confirms that all parameters have remained the same and that the results reported by the new system match those reported by the old system.

Even considering all these factors, planning is the most time-consuming step of any upgrade or migration. The type and timing of the upgrade, as well as the process, need to be decided well before implementation. Proper planning will help provide a more efficient execution of the migration.

7. IS THERE ANY RISK OF LOSING MY DATA DURING THIS UPDAT-ING PROCESS?

Not if you consult with the the Agilent informatics team performing the migrations. Working with an informatics services team ensures that the upgrade migration was planned and implemented correctly. Ideally, the old system should always be available and untouched during a migration, in the event that any issues arise.

8. I CAN'T HAVE MY ENTIRE LAB DOWN FOR AN UPGRADE. IS THERE ANY HELP AVAILABLE FOR PLANNING TO MAXIMIZE EFFICIENCY?

Check with your informatics services team. At Agilent, there is a highly skilled project management office to help with all aspects of updating your CDS. The office will assist you every step of the way—from the kickoff meeting to the completion meeting. Each step is documented, and meetings are set to make necessary changes as the project progresses, even while a chromatography system is still in use. On a cutover day, the old system is retired and the new system is fully implemented. This

transition will be managed and coordinated with the lab schedule to minimize the impact on production and output.

9. ARE THERE ANY RESOURCES AVAILABLE TO SPEED UP THE VALIDATION PROCESS?

Validation can be a very time-consuming process. Agilent offers services to help customers validate their own systems using its the Agilent compliance engine. This computerized validation service performs the installation qualification (IQ) and the operational qualification (OQ) for the customer. In addition, Agilent has validation professionals who coordinate with customers to write their own protocols. This service can reduce the time to complete the validation by a third.

10. IS TRAINING AVAILABLE TO SUPPORT STAFF AFTER AN UPGRADE?

Lab staff will have workflow adjustments after an upgrade, especially if it involves moving to a different platform or a user interface changes significantly. Your instrument provider may offer trainings to ease the transition. Agilent, for example, provides several training options. An introduction service covers the basics of navigating the new software and is usually bundled together with any installation service.

There are also several in-depth training options available for purchase. Training can be provided remotely or in person, in your lab or at an Agilent location. Consulting sessions can be structured to accelerate your system productivity by providing focused workflow assistance for your lab. This can include developing custom report templates and custom calculations. It can also explore sections of the software where you prefer more in-depth training. At the Agilent Community forum, users can ask questions to gain additional information from their colleagues.

Upgrading your lab's CDS takes time and IT support, but utilizing an instrument provider's services in planning, migration, validation, and training can maximize the benefits of upgrading with minimal impact to lab operations.

For more information on CDS upgrades, watch this webinar.

REFERENCE
C&EN Webinars, "Answers to Common Questions When Considering a Chromatography Data System Upgrade," Sept. 29, 2022, https://connect.acspubs.org/CENWebinar_AgilentTechnologies_9_29_22?partnerref=AgilentQA.

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