

TotalChrom Client Installation Options

Introduction

A variety of installation options exist for Chromatography Data System (CDS) clients. All have their place depending on system design, requirements and security needs. The two primary standards for client side installation are full client and small client. A third option, thin client, is gaining popularity as regulated labs look for alternatives to reduce implementation and validation costs.

This technical note provides a brief overview of each of these installation options as they relate to PerkinElmer's TotalChrom Client Server (TCCS) software.

Full Client Installation

A full client installation procedure is similar to the installation of the application on a server. A complete application directory is loaded on the client machine. Depending on the operating system of the computer, a service may be installed, or an interactive process will be used, when the application is launched.

Windows NT or 2000 clients using this type of installation have the capability of being converted to TCCS servers or even a standalone system. Only a registry entry and access to a license file is required to change a computer from a full client to a standalone system. This is of course dependent on the user having local administrative access. The majority of TCCS installations up to 6.2.0 have used the full client installation option. This requires the client's TCCS system directories be properly secured using Windows NT file security.

There are additional validation concerns when deploying full

client systems. With a small number of units, manual or scripted installs are adequate. However, with large scale deployments a "packaging" utility becomes much more practical. With the manual process the verification of each client through a specific test protocol becomes essential. With packaging software, a reduced test protocol can be defended with the verification of representative test machines. This has in fact been the most common deployment process for a large number of clients.

The operation of TotalChrom in a full client environment requires that the user has, at minimum, "read" access to the application directory on the license server. Once authenticated, the user can launch various TC applications resident on the local computer. The local PenExe/.../temp directory is used for scratch pad files. These are virtual renderings of methods, sequences, reports, and result files that the operator has open for editing. At the point that a file is "Saved" or "Saved As" a "Write" process is executed.

This process illustrates the importance of a verification process that ensures proper security is in place on directories on full clients. In practice, as long as security is properly applied on the file server, data integrity is assured. However, improper application of client side security does open the door to the possibility of unapproved data manipulation that could escape cursory review.



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More often it limits proper operation of the application at the user's end.

Each TCCS machine, whether a server or client, has numerous system variables specified or implied. Most may be changed from the default values through edits in the registry. Redirection of user and system paths can redirect much of the locally stored information. These are useful options if more central control and management of clients is desired. However, this adds to the complexity of client installs and testing.

Small Client Installation

The requirements of validation in regulated environments quickly led to a search for implementation options that would simplify the application and maintenance of client side security. This was especially important in organizations where Windows 95/98 was the standard desktop. Since, NTFS access could not be implemented with these operating systems, an alternate means was required.

Small-Client or shared client is simply a redirection of paths. This was implemented and is functional with all versions of TCCS. Prior to 6.2 a specific utility did not exist for this type of install. The end result was always the same, all TC executables, .ini files and temp files were redirected to a share on a TC file server. This network share would then have proper NTFS file access set and controlled by the system administrator.

Some of the following can be implemented with a full client, but are all automatic in a small client install:

- One client directory to secure.
- All client temp and log files are centralized.
- All clients use one set of TC executables.
- No local services required.
- Multiple client shares may exist for groups of computers or even each client.



The variations and advantages possible with a shared client are numerous.

- Easy administrative access to user specific .ini files.
- Only shared Windows files and shortcuts are loaded on the clients.
- Validation of clients is simplified and more easily defended with this option.

Small client installs prior to 6.2 were standard installations with the install path redirected to the network share. Each install, if manually executed on each client, would go through the process of overwriting the application files.

Similarly a single uninstall of client through an administrative account would delete the application files for all clients. The added latency for program launch can sometimes be a concern in slow networks. But even here the performance penalty should be minimal. Current hardware performance from the server to client end should make this a non-issue.

With the release of version 6.2.0.0.1, a small client install utility was added to the application. This simplifies the install of a client with a single option dialog. Here the License Manager is identified along with the network share and host name. The installation procedure pulls down the needed Windows and VB files (TC Publisher) and makes the registry and environmental path entries. No changes occur at the

server side. On Windows NT and 2000, the LCD service is not installed. When users launch the application an interactive LCD process is started. This closes when TotalChrom is exited. Users with local application installation privilege can install TotalChrom on their desktop without any additional rights on the server or in TotalChrom. Installation or un-installation of TCCS does not impact any other client or server.

This installation option would be the preferred choice for standard clients in a regulated environment. Simplicity of deployment and management is gained without any significant penalty. Granted, the application is still running on the user desktop and, therefore, at the mercy of local conditions and compatibilities.

Thin Client Installation

Desktop compatibility and the soaring costs of meeting somewhat ambiguous validation requirements are becoming more of an issue today. This may be driven more by regulators and consultants and their perception of a possible problem than by reality. Regardless, it is defining how a compliant data handling system should be designed.

The user interface should have all the desired functions to facilitate

collection and processing of chromatography data without any of the liabilities of being integrated into a personal desktop computer with all its possible security problems. We could go back in time to a proprietary O/S and network protocol and dedicated terminals or terminal emulation software or use more recent solutions which are hybrids with considerable flexibility and much less cost.

Citrix Systems, Inc. offers a relatively simple solution, using MetaFrame® XP to deploy a variety of applications. It is particularly attractive in combination with TCCS for those in a regulated environment. The data system interface, instead of being served to the client is "published." A broad range of integration between a desktop and published application can be configured, but in its most basic form only screen captures and mouse/keyboard entries are transmitted between the server and client. Data files are not downloaded to the PC for manipulation and editing, but rather, all data processing is done on the server. The user is running a session on a validated client with a specific O/S, service pack, and application image. All the peripheral but necessary applications such as Word, Excel, and web browsers do not interact with the published application, unless desired. The user's desktop just has an icon to launch the desired application. This type of installation is termed "thin client."

From the administrator's perspective this added layer gives great control and management. Access to the published application is controlled through a combination of NTFS access, Citrix MetaFrame XP Server access, and TCCS accounts. Deployment of a client can be as simple as directing a user to a Web page. Citrix MetaFrame XP server farms can be configured to load balance based on a variety of criteria. Usage and activity can be directly monitored. TCCS deployment at sites where

data collection and processing has to be isolated from the greater corporate environment makes Citrix MetaFrame XP a logical solution. Dedicated lab computers are not required, and the user's personal workstation is also the TCCS workstation without any of the liabilities. Platforms are standard Windows NT4.0 Terminal Server Edition, or Windows 2000 with Terminal Services loaded and Citrix MetaFrame XP.

The final secure client option would be to use a true thin client as the desktop. This is a terminal with ROM based O/S using MetaFrame XP serving a TotalChrom client. For lab bench computing this in fact is an attractive option. Only approved applications are published and the unit does not have a disk drive of any sort. From a cost, simplicity and validation perspective this would be the most attractive choice for a dedicated laboratory workstation.

Summary

Each of these options offer a solution to meet the variety of needs facing most laboratories. Choosing which deployment option is best for you requires careful consideration of work flow, security, compliance, budgetary, and infrastructure issues facing your lab. How you deploy your CDS, will impact your business for a long time to come.

Ensure all members of your implementation team are brought together in pre-installation review sessions so everyone is on board and participating towards a common goal.

Remember, although TCCS 6.2 has been qualified, not all CDS systems can be deployed on all of these options. Check with your vendor to ensure the product you have has been qualified on the installation procedure you desire. No one likes to go through weeks of implementation time only to find out what you need to work, either cannot, or cannot without significant manipulation of your IT infrastructure. PerkinElmer can provide implementation experts to

help design a solution that best meets your particular needs. Contact your local PerkinElmer Networked Data Systems Service and Support representative for more information.

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