**Q** What is ChemDraw Direct?

**A** ChemDraw Direct is a HTML5/JavaScript implementation of ChemDraw that enables developers to embed chemical drawing and intelligence functionality into any web based application.

**Q** What do I need to develop a ChemDraw Direct powered application?

**A** ChemDraw Direct is implemented as a JavaScript library that can be readily embedded into any web based application. The host application developer needs to include an HTML `<script>` reference to the location of the ChemDraw Direct JavaScript files and a single HTML `<DIV>` tag within their page to host the drawing canvas. Chemical content can be programmatically set or retrieved from the host page via JavaScript.

Some advanced functionality such as structure clean up, chemical data format and image conversions/calculations require an additional server-side component that exposes REST services used by the ChemDraw Direct client. The host application developer can enable/disable the features that require the service as well as control the service end-point used by the client.

**Q** How do I deploy ChemDraw Direct with my application?

**A** 1. Package and deliver the ChemDraw Direct JavaScript library and supporting REST service together with your own application. To that end, ChemDraw Direct is distributed as a standard Windows installer package that deploys an embedded HTTP server configured to deliver both the JavaScript library and REST service end-points. The ChemDraw Direct REST service can only be installed on a Microsoft Windows operating system. The JavaScript libraries can optionally be delivered from your own HTTP server under any operating system.

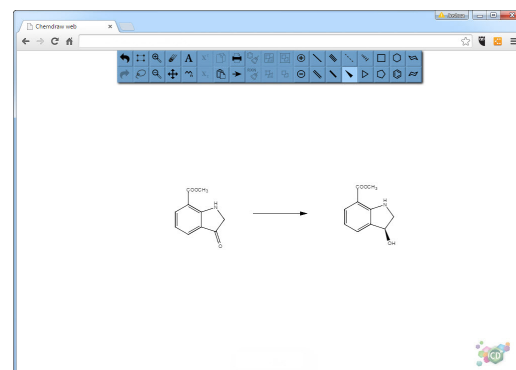


Figure 1. ChemDraw Direct Drawing Pane.

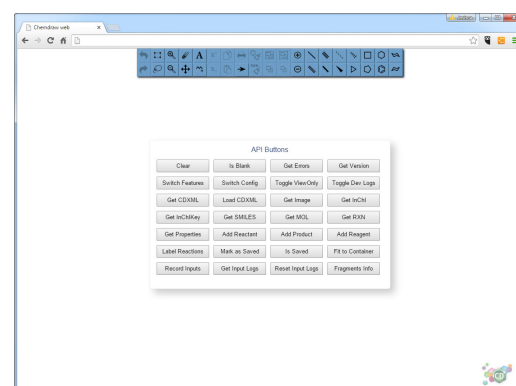


Figure 2. Available API calls for ChemDraw Direct.

2. Subscribe to ChemDraw Direct on the Cloud where you will be able to access the JavaScript libraries and REST end-points of ChemDraw Direct. There is nothing to install, maintain, or deliver with your host application. Just reference our servers from your HTML code to instantiate and access the latest version of the client and server components.

**Q What are the security/privacy implications of using ChemDraw Direct Cloud?**

**A** For features that require the service, all or part of the chemical structure data selected by the user will be transferred to the ChemDraw Direct servers hosted by PerkinElmer. The data is always encrypted using SSL over HTTP. The server processes the data in volatile memory and never permanently stores any submitted chemical structure information.

**Q What do I need to gain access the ChemDraw Direct Cloud Services?**

**A** As a developer of a host application you must obtain an API Key from PerkinElmer in order to reference the hosted JavaScript libraries or access the REST services. In addition, every request must include an end-user activation key. The user activation key is typically a verified end-user email address. The email address can be programmatically set by the host application, or manually provided by the user via and activation dialog implemented by ChemDraw Direct.

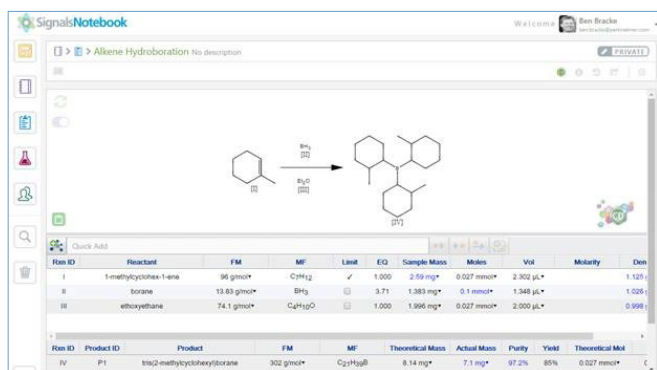


Figure 3. ChemDraw Direct Sketcher in PerkinElmer Signals™ Notebook.

**Q Do end-users need to install any software?**

**A** No. All the end-user needs to run is a compliant web browser with network access to the ChemDraw Direct server.

**Q What is “extended copy-paste”?**

**A** Modern browsers place restrictions on what data can be read from the clipboard. Most chemical drawing programs place data on the clipboard in a format that cannot be read by any web browser. Extended copy-paste enables ChemDraw Direct to read chemical structures from the clipboard, but require installing an additional browser applet or extension.

Without extended copy-paste enabled, end-users must manually copy data in a supported format (CDXML or molfile) from a text file into the ChemDraw Direct canvas. Recent versions of ChemDraw desktop provide a “Copy as CDXML” menu item making it possible to transfer drawings directly from ChemDraw without enabling extended copy-paste operations.

**Q What features require access to ChemDraw Direct services?**

**A End user tools/actions:**

- Structure Cleanup
- Reaction Cleanup
- Name-to-Structure
- Structure-to-Name
- Paste molfile text
- Advanced copy/paste

**JavaScript API calls:**

- getInChI()
- getInChIKey()
- getSMILES()
- getRXN(callback)
- getMOL()
- gloadCDXML(cdxml)
- ggetCDXML()
- ggetImgUrl()
- glabelReactions()
- ggetProperties()
- ggetFragmentsInfo()
- gnameToStructure()
- gstructureToName()