i2b2 Web Client

Quick Setup Guide

i2b2 v1.3 RC4

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Introduction

The i2b2 web client is an alternative web-based interface to the i2b2 Hive, which reproduces much of the functionality of the desktop client through a web browser. The primary advantage of the web client is that software does not have to be installed on users' computers. This aids greatly in enterprise-wide rollout of i2b2 across an institution. However, because of the current limitations of web browsers, certain advanced functionality will continue to require a subset of "power users" to download a desktop client.

Browser Requirements

The i2b2 web client has been tested on Internet Explorer 6 and 7, Firefox 2 and 3, and Safari 3. JavaScript must be enabled. There is a known bug in IE 6 that causes the website to stop responding if the "dates" or "occurs" option for a query panel is set. This will be corrected in the final release.

Server Requirements

The i2b2 web client can be hosted from any web server that supports HTML, JavaScript, CSS, and GIF/JPG/PNG image files. It has been tested on Apache for Linux and Windows IIS.

Using a Proxy

The web client communicates with server-side web services using AJAX (asynchronous JavaScript and XML). Note that all modern web browsers, as a security measure, follow a "same origin policy" that prevents JavaScript originating from one domain/protocol/port combination to call web services existing at another location. This means that the web client can only call the i2b2 web services if the client code and all of the web services share the same domain/protocol/port. A workaround is to use a server-side proxy. This is a small application, separate from the rest of the hive, which shares a domain/protocol/port with the web client. Instead of calling the i2b2 cells directly, the web client can pass all messages to the proxy, and the proxy can forward the messages to the appropriate i2b2 cells. Because the same origin policy does not extend to the server, the web client can reach i2b2 cells on remote servers by going through the proxy. Although the web client is platform independent, a server-side proxy has to be written for the type of server that is hosting it. Included in RC4 are proxies written in PHP and Java, primarily for use on Linux servers. A Microsoft .NET proxy for use in Windows IIS will be available soon.

Configuring the Web Client

Configuration files within the i2b2 web client follow a standard JSON-style layout. They can be modified using any text editor, but it is important not to change the overall structure of these files. The final release of the web client will include detailed documentation on each of the configuration settings. The instructions below are the minimum needed to setup the web client in a new environment.

The main web client configuration file is located in the root directory and named i2b2_config_data.js. Its contents look like

```
{
        urlProxy: "index.php",
        urlFramework: "js-i2b2/",
        //--------------------------------------------------------------------
        // THESE ARE ALL THE i2b2 HIVES KNOWN TO THE WEB CLIENT
        lstDomains: [
                { name: "localhost",
                  domain: "demo",
                  project: "demo",
                  debug: true,
                  urlCellPM: "http://127.0.0.1:9090/axis2/rest/PMService/"
                },
                { name: "i2b2.org",
                  domain: "demo",
                  project: "demo",
                  debug: true,
                  urlCellPM: "http://webservices.i2b2.org/PM/rest/PMService/"
                }
        ]
        //--------------------------------------------------------------------
}
```

The first line, which begins with "urlProxy", indicates the URL for the proxy. This line can be deleted, and the web client will call the i2b2 cells directly; however, the web client must share the same domain, protocol, and port as the cells for this to work.

The second line, which begins with "urlFramework", indicates the name of the directory containing the code for the web client. In general this should not be modified.

The variable "lstDomains" is a JavaScript array that lists one or more i2b2 hives that the user can access through the web client. For each hive, the following five attributes must be defined: "name", which is how the hive will be listed on the web client login screen; "domain", which is the domain used by the hive; "project", which is the name of the project the user will login to; "debug", which determines whether buttons should be displayed that show the XML request and response messages; and "urlCellPM", which is the URL for the Project Management cell.

Note that in the final version of the web client, the project name(s) will be automatically determined by the initial call to the project management cell. Users who have access to multiple projects on a single

hive will be given an option to select a project. On this RC4 release, however, the project must be specified in the configuration file.

Configuring the PHP Proxy

A simple proxy, index.php, is included in the root directory of the i2b2 web client. For security, the proxy can be configured to allow only certain redirect URLs. The code includes a white-list, which is a list of acceptable URL prefixes, and a black-list, which is a list of invalid URL prefixes. In order for the proxy to redirect an i2b2 message, the URL of the cell must begin with at least one of the white-list values, and it cannot begin with any of the black-list values. To edit these lists, open the index.php file and add or remove items from the arrays named $WHITELIST and $BLACKLIST. By default, the white-list includes an empty string, which allows all URLs to pass.

Installing the Web Client on the i2b2 VM

The i2b2 web client can be run from within the i2b2 VM using Apache. Begin by copying the i2b2webclient_1-3-RC4.zip file into the directory "/var/www/html". The root account will be needed for this. Then, run "unzip i2b2webclient_1-3-RC4.zip". The location of the default page will be "/var/www/html/i2b2/default.htm". The default values in i2b2_config_data.js and index.php are setup to work on the i2b2 VM without modification.

Next, enable Apache by first selecting the menu System > Administration > Server Settings > Services. Enter the root password (e.g., "demouser") if prompted. Then, on the Background Services tab in the Service Configuration window, check the "httpd" service and click the Start button. Once Apache has started, click the Save button in the Service Configuration window, and close the window. The web client should now be accessible within the VM from http://127.0.0.1/i2b2.

Future Features

The final release of the i2b2 web client will support multiple projects and the new workplace cell. It will also include an API that allows easy development of new cells. Extensive documentation will be provided explaining the architecture of the i2b2 web client and how to use the API.

License

The i2b2 web client source code is licensed under the i2b2 Software License Agreement. The i2b2 web client use three open source JavaScript libraries: Yahoo! User Interface (YUI), Prototype, and Firebug. The js-ext directory includes the code for these, along with their respective license agreements.