Making IBM3270 hosts usable within Enterprise Portals
3270 Emulation with h3270

Overview

h3270 is a program that makes IBM 3270 hosts usable from within a web browser. It can integrate existing host applications into modern, browser-based environments, without the need for additional client software, providing seamless integration with all kinds of other information systems within the enterprise.

h3270 differs from other similar solutions in the following key points:

● h3270 renders host screens in **pure HTML**. There is thus no need for any kind of special client software; hosts can be accessed from any platform where a web browser is available. h3270 also does not rely on client-side Java applets, which allows for easier integration with other applications.

● h3270's rendering mechanism is **change-tolerant**, which means that many kinds of changes in the underlying 3270 screens are reflected immediately within the web browser, without the need to adapt layout templates.

● h3270 is **portal-enabled**, and can thus be used as a portlet component in a portal server. This allows elegant data exchange between applications at the user interface level, without any changes in the underlying applications. The h3270 portlet follows the new Portlet API standard, making it interoperable with any standards-compliant portal server such as Jakarta/Jetspeed, or the IBM WebSphere Portal Server.

● h3270 is **open source** software, which means that customers have access to the entire source code, and are free to make changes and extensions as required for their particular project. h3270 is released under the General Public License (GPL), which means that if you want to include it into a released product of your own, that product has to be released under GPL as well. For customers who do not wish to be constrained by the GPL, we also sell commercial licenses.

Components

h3270 is a server-side Java application that can run in any J2EE-compliant application server. It is intended to run as a portlet within a portal server (a portal server is an application server that additionally supports the Portlet API), because that offers the most potential for integration with other applications. However, h3270 can also run as a web application of its own, without the need for portal technology, and it can also be integrated into other kinds of portal servers that are not (yet) compliant with the Portlet API standard.

To communicate with the IBM host, h3270 uses an external open source program called s3270 as a protocol engine. s3270 is written in C, and runs on all major server platforms. On the host side, s3270 uses TN3270-compliant TCP/IP connections. The communication between h3270 and s3270 is via standard interprocess communication (pipelines). Please see the picture on the next page.

Rendering Mechanism

When converting terminal-based user interfaces into browser-based ones, the main problem is that terminal screens are character-oriented and mono-spaced, while HTML pages normally use proportionally-spaced fonts and much more sophisticated layout mechanisms. Since HTML is richer than terminals, it is of course possible to render a terminal screen in a

web browser exactly as it appears on the terminal, using mono-spaced fonts and simple input fields. However, users will not normally be satisfied with this kind of »terminal pages«, because they are less visually appealing than other HTML user interfaces, and they also lack the functional enhancements that HTML is capable of (e.g. drop-down lists and hypertext links).

h3270 uses pluggable rendering algorithms based on regular expressions to solve this problem. We call these pluggable algorithms *renderers*. A renderer can be as simple as a text-based search to parse relevant information from a 3270 screen and placing it into an HTML template page. More sophisticated renderers can detect tabular layout structures in a screen, and translate them into equivalent HTML tables. A renderer can be specific for a single screen, or cover an entire class of screens. Likewise,

renderers can be written so that they are tolerant about changes in the underlying screens. This way, field labels may change, or new fields may be added to the screen, and these changes are then immediately visible in the browser, with no need to adapt the corresponding renderer.

Beyond these layout considerations, h3270 can enhance screens functionally. It can replace input fields with drop-down lists that indicate allowable values. Menu-driven navigation with numerical choices, as it is common in most host applications, can be replaced with hyperlink-style navigation structures as they are found in modern HTML interfaces. Context-sensitive help systems can be plugged in, so that usage information can be added to certain words or regions in the HTML output, e.g. via tooltips.

Because h3270 is *open source* software, customers can make changes and extensions as required for their particular project. This includes functional extensions as well as the possibility for a lot of technical adaptions, for example the choice of host-communication (3270 Gateway), the JDK-version needed, the Portal Server to be supported etc.

Please ask for live demonstration and/or contact to our customers