

## WEB-ENABLING YOUR LEGACY APPLICATIONS Choosing the Right Tool for the Job

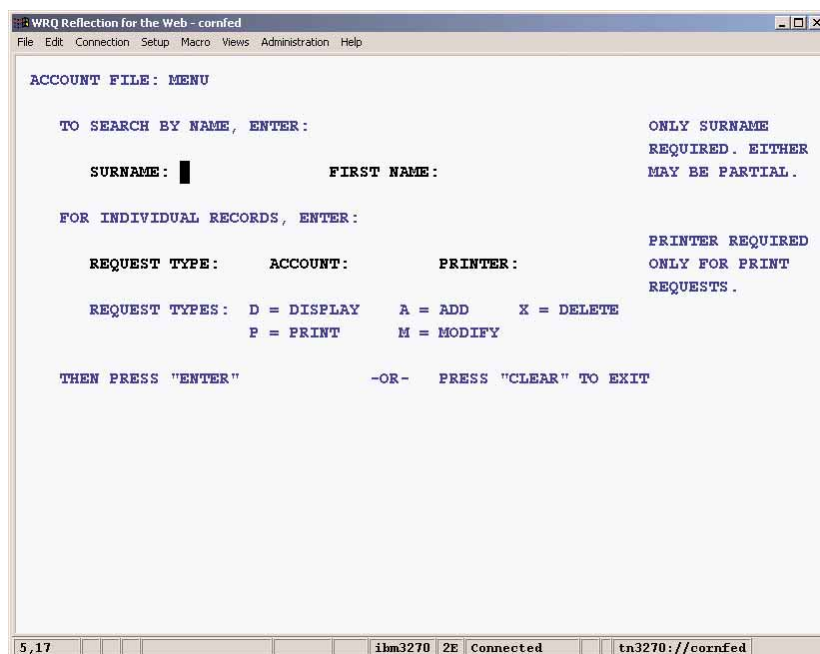
Why aren't more IT organizations web-enabling their legacy applications? After all, the technology isn't new. It isn't hard or time-consuming to deploy. And the benefits of doing so—streamlined business processes, reduced costs, better customer service, and tighter integration with partners—are crystal clear.

What isn't clear is when and how to use web-enabling technology. Given the number of vendors and solutions available, that's not surprising. This was especially problematic early on, when some IT departments jumped the gun, picked the wrong technology, and failed to generate the expected returns. Now disillusioned with the concept, they aren't about to make that mistake again.

This paper provides an overview of the top three web-enabling technologies—web-to-host, rejuvenation, and legacy integration. It explains how these technologies work, outlines their pros and cons, and tells which user group is best suited for each. Once you've clearly identified your users and their requirements, this paper can help you choose the right web-enabling tool for the job.

### Web-to-Host: Green Screens in a Browser

Web-to-host solutions turn the browser into a terminal emulator. There are no changes to the terminal interface or to the flow of the original legacy application. Users still interact with green screens, but the difference is that they access the legacy applications from their browsers. And that means they don't need any terminal emulation software on their desktops.



*Web-to-host technology lets users work within a familiar green-screen environment.*

### Background

Legacy applications, which still run the core business functions in most organizations today, commonly reside on mainframe and mid-range systems, including IBM S/390, IBM AS/400, UNIX, HP e3000, and OpenVMS hosts.

### Web-to-Host: Real-World Example

When a large Norwegian bank with 64 regional offices updated its data-processing center, it switched from traditional emulation to web-to-host technology. Administration is now handled from a central location, and a secure link is distributed to each user. Using this link, bank employees download only the specific functions they need and continue to work in a familiar green-screen environment. According to the bank's IT staff, the new technology has dramatically simplified management and cut operational costs.

### How It Works

Emulation is performed by a small Java applet that the administrator publishes, along with configuration settings for different session types, to any standard web server. There's no need to rewrite legacy code or add legacy software. When users need to connect to a legacy application, they simply click a link on their intranet or portal to download the applet. Caching technology saves the applet on the user's desktop; when the user makes subsequent requests, only modified files are downloaded.

Once the applet is loaded, it establishes a direct connection between the browser and the legacy application. To the legacy application, this connection looks like any other emulation session. In fact, users interact with the legacy application just as they would with a traditional Windows<sup>®</sup>-based emulator. All the standard macro, file transfer, keyboard mapping, and printing features remain the same.

### Pros, Cons, and Target Audience

Administrators benefit the most from web-to-host technology. Because the applet is delivered over the web, deployment and maintenance costs are significantly less than they are for Windows-based emulators. Acquisition costs are often lower as well. In fact, Tolly Group research reveals that the total cost of ownership for web-based emulation is as much as 60 percent less than it is for Windows-based emulation.

In addition to lower TCO, web-to-host applets give administrators greater management control and more security options than Windows-based emulators. For example, it's easy to restrict or expand user access to different hosts and session features. Sessions can also be authenticated and encrypted when secure connections are essential.

While web-to-host applets have their definite benefits, they are still terminal emulators with complex green-screen interfaces. That means they aren't appropriate for occasional-use employees, business partners, or customers. But if you want to keep your legacy-intensive users productive, at a significantly lower cost, web-to-host is the ideal solution.

### Solution Summary

#### Architecture

- Direct connection from client to legacy application

#### Legacy Requirements

- Terminal session support (no legacy code changes)

#### Desktop Requirements

- Browser
- Java Virtual Machine

#### User Requirements

Knowledge of:

- Legacy application
- Green screens

#### Interface

- Standard terminal screen

#### Pros

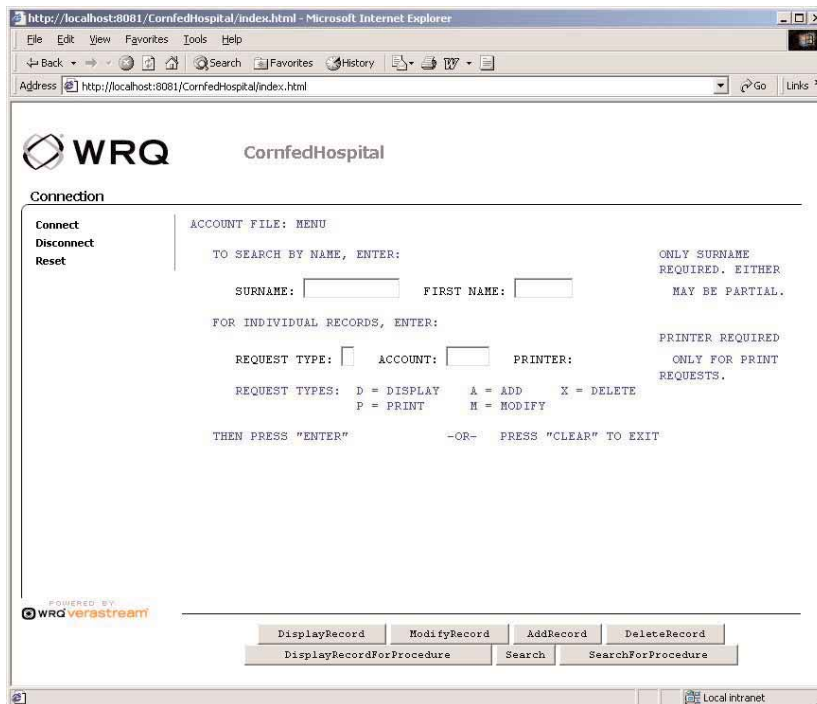
- Reduced TCO
- Greater management control
- Better security
- Full emulation features

#### Cons

- No changes to screen appearance
- No changes to application flow

## Rejuvenation: Green Screens Converted to Web Pages

Rejuvenation technology converts the display of the terminal screen into HTML. To users, the green screen now looks and feels like a web page. Rather than using tabs and PF keys, they can simply point and click on links or buttons. In most cases, however, there is still a one-to-one correspondence between the original legacy screens and the new web pages. In other words, the process flow of the legacy application does not change.



Rejuvenation technology gives users who understand the business process a point-and-click interface.

### How It Works

Rejuvenation servers run between the user and the legacy application. The user initiates a session by connecting to the rejuvenation server, which in turn establishes a connection to the legacy application. For every action the user performs on the rejuvenated screen in his or her browser, the server makes the equivalent request to the legacy application, receives a new screen from the application, modifies the screen to look like a web page, and returns the page to the user's browser. As with web-to-host technology, no legacy code changes are necessary. To the legacy application, requests from the rejuvenation server look like any other user session.

Most rejuvenation servers provide both automatic and custom options. Auto-rejuvenation doesn't require any programming, but the fields and layout of the web page are nearly identical to the original legacy screen. Custom rejuvenation allows you to make minor layout changes, such as hiding fields, combining simple

### Rejuvenation: Real-World Example

A Canadian insurance company had a serious workflow problem: It was taking data-entry staff one to two hours to key information from a single claim form into a VAX application. Why? Because the fields on the form, initially filled out by brokers, didn't match those of the VAX screen. Using rejuvenation technology, however, the company was able to replicate the paper form in HTML and automatically submit web-based claim information to the VAX application. Now, because they are already familiar with the flow of the original form, brokers can enter claim information themselves. This has freed up the time of two dozen data-entry employees.

### Solution Summary Architecture

- Client to middle-tier server to legacy application

### Legacy Requirements

- Terminal session support (no host code changes)

### Desktop Requirements

- Browser

### User Requirements

Knowledge of:

- Legacy application
- Web browser

### Interface

- Terminal screen rendered as a web page

### Pros

- Zero-footprint client
- Point-and-click interface

### Cons

- Auto-generated web pages not suitable for new users
- Custom development needed to modify legacy screens
- Limited ability to change the legacy application, even through custom development
- Incomplete emulation functionality

screens, and replacing codes with understandable text. But because the user drives all navigation, your ability to change the application in any meaningful way is limited.

### Pros, Cons, and Target Audience

Initially, IT organizations saw rejuvenation as a quick fix for extending legacy applications to a broader audience of users. But the technology has failed to live up to expectations for one simple reason: Even extensive custom development work cannot change the flow or functionality of the legacy application enough to satisfy new users. And, in most cases, the effort required takes as much time as building a new web application using legacy integration technology.

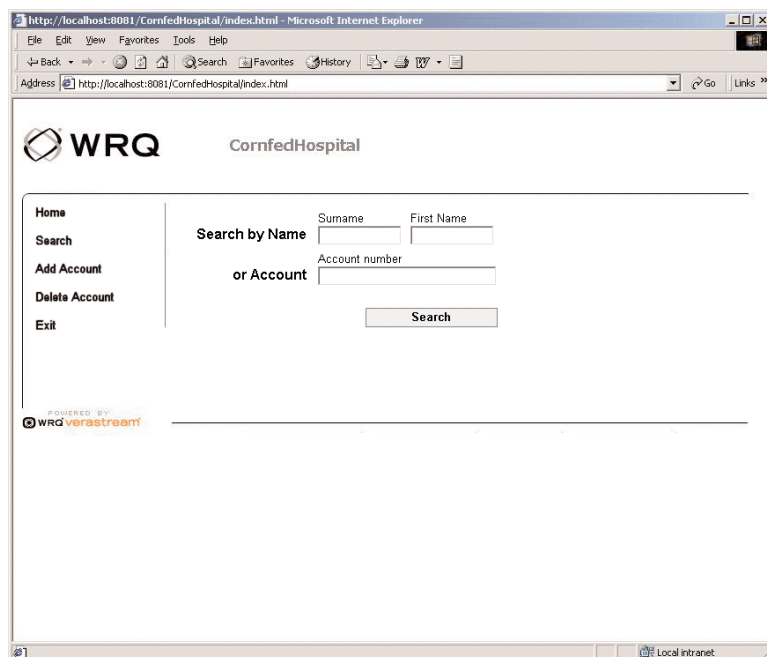
For this reason, rejuvenation servers are best suited for occasional-use employees or tightly integrated partners. These users already understand the underlying business processes. Rejuvenation simply gives them an updated interface so they can work more effectively.

### Legacy Integration: True Web Applications Built from Host Functionality

Legacy integration technology enables the creation of custom web applications that are fully integrated with legacy applications. The user is presented with a new web application that is easy to use and specifically designed for the tasks they are trying to accomplish. Because the legacy application is integrated with the web application, the developer doesn't need to duplicate any legacy business logic, data processing, or transactions. Just as important, the developer is not limited to a one-to-one mapping of legacy screens to web pages. The process flow of the web application can be radically different from that of the legacy application.

### Legacy Integration: Real-World Example

A state department of motor vehicles needed to unlock its mainframe functionality and provide secure self-service to thousands of drivers and business partners. Using legacy integration technology, it built a self-service web site in just four weeks. Now constituents can make address changes, renew car tabs, get tax information, and report vehicle sales on line, 24x7. Bottom line? The agency saved \$260,000 in legacy programming costs and cut license-processing times by 75 percent.



*Legacy integration technology gives new users easy access to host functions.*

### How It Works

Like the rejuvenation server, the legacy integration server is a middle-tier solution that runs between the user and the legacy application. But the legacy integration server does more than just convert the legacy screen into a web page. It encapsulates a combination of legacy screens, navigational commands, and data elements into components that perform complete business functions. The web application can then use the components without being constrained by the original screens or application design. The underlying legacy code remains in place and functions as before.

### Pros, Cons, and Target Audience

Legacy integration servers “componentize” legacy functionality so that it can be readily used by new applications. Once the components are created, the web developer can use them over and over again without having any knowledge of the underlying legacy application or system. This level of abstraction accelerates new application development.

The only drawback to legacy integration technology is the time required to create the components. The good news is that most well-built integration servers include graphical tools that simplify the integration process. If effective, these tools will isolate the component developer from the low-level details of interacting with the legacy application. They will also adapt automatically to changes in the legacy application, eliminating the need to constantly recreate the components.

Because legacy integration technology lets you change the process flow of the legacy application and present the information in whatever form your users need, it is the perfect solution for business partners and customers.

### Stay Focused on Your Users

Ultimately, the product or combination of products you choose will depend on the needs of your users. Are they entering small or large amounts of data? Do they access the host application all day, every day, or once a month? Will they be more productive using a green screen or a graphical web interface? How familiar are they with the legacy application?

For employees that access legacy applications extensively, web-to-host technology is the best option. You can reduce your ownership costs without sacrificing any host or emulator functionality. Rejuvenation technology can extend simple legacy applications to occasional-use employees or tightly integrated business partners who are already familiar with your business processes. But if your goal is reaching completely new constituents, including business partners and customers, you’ll want to build an easy-to-use web application powered by legacy functionality. For these users, there is no better choice than legacy integration.

### Solution Summary

#### Architecture

- Client to middle-tier server to legacy application

#### Legacy Requirements

- Terminal session support (no host code changes)

#### Desktop Requirements

- Browser

#### User Requirements

Knowledge of:

- Web browser

#### Interface

- True web application

#### Pros

- Legacy functionality can be extended to new users
- Web developers don’t need legacy application expertise

#### Cons

- Development time to create components from legacy applications (one to two days per function)

## Related Reading

### Tolly Group White Paper

*Web-to-Host: Reducing the Total Cost of Ownership*

### WRQ Case Study

*NYCE Moves ATM Transactions to the Web in Record Time*

### WRQ Case Study

*Norwegian SpareBank 1 Vest Chooses Thin-Client Solution*

### WRQ Case Study

*WRQ Verastream Helps Minnesota DVS Improve Service and Cut Costs*

### WRQ Technical Update

*Legacy Application Modeling with WRQ Verastream Host Integrator: How Host-Component Integration Differs from Traditional Screen Scraping*

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