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TECHNOLOGY

Software Builds Bridges In Science Community

*Canadian group uses GraphOn's
Java-based tool for genetic data*

BY MEGHAN HOLOHAN

CHRISTOPH SENSEN, head of the National Research Council of Canada's (NRC) Bioinformatics Group, had a problem. He had to connect 800 scientists to more than 100 databases and about 1,000 applications to make the country's bioinformatics project work.

Canada's government created the NRC's Canadian Bioinformatics Resource (CBR) in 1995 to coordinate genetics research within the country and track work being done abroad.

The council's existing Unix platform was used to support the necessary databases, which included information regarding DNA sequencing and the status of various genome projects around the world, according to Terry Dalton, who is the information technology manager at the NRC.

Streamlining Database Access

The scientists in the group were spread across Canada. Each of them was using a different X Window System

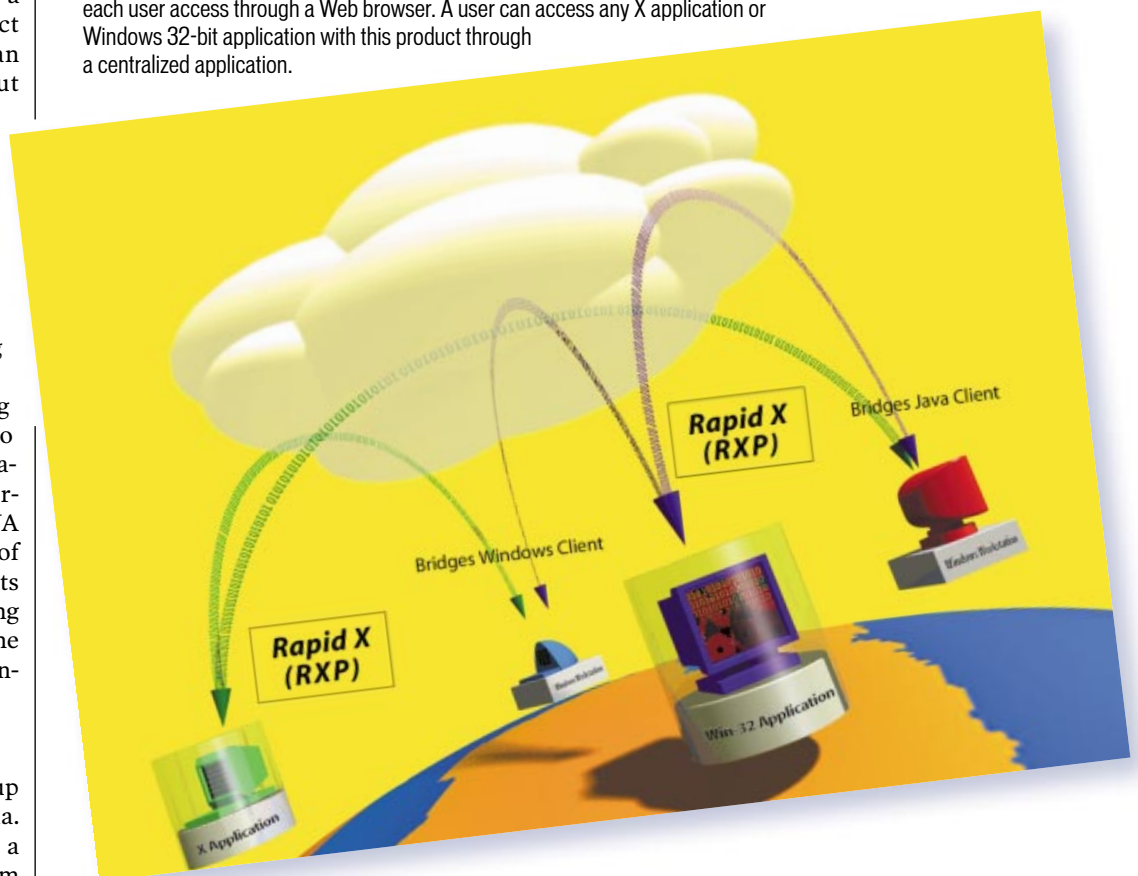
emulator — software the

users installed themselves to access Unix applications. Sensen said he and other council members soon saw the need to streamline access to the databases and shore up security.

Early last year, the CBR installed GO-Joe software from GraphOn Corp. in Morgan Hill, Calif., to link the organization through a common browser-based desktop application.

All Access

GraphOn's Bridges software changes Unix-based programs into Web-accessible applications without changing any of the code. Instead of requiring users to install different programs to handle Unix's X protocols, Bridges gives each user access through a Web browser. A user can access any X application or Windows 32-bit application with this product through a centralized application.



The software, which has since been renamed Bridges, connects the CBR's scientists to existing Unix applications and databases.

With Bridges, a user needs only a Web browser such as Netscape Navigator or Microsoft Internet Explorer to access the databases. To provide access, the software uses a small Java applet, which GraphOn says can be downloaded onto almost any Java-enabled desktop.

Bridges replaces a cumbersome process in which X servers communicated X protocols to X interfaces, which is standard for Unix systems, said Robin Ford, vice president of technology at GraphOn. This process often caused delays because of the frequency of communication between the user's terminal and the server, Ford said.

The CBR outsourced the software to application service provider GraphOn so scientists wouldn't have to install and maintain the software, Sensen said.

"User knowledge of Unix is not strong, and this service is the best way to stay connected," he said.

The researchers must stay connected to the databases so they can continue to work on their projects, said Dalton.

The information in the databases provides background for the projects and also prevents scientists from duplicating research.

JUST THE FACTS

Benefits of Bridges

- Speeds up system by **eliminating** the need for each user to have a different Unix X Protocol.

- Users have **access to all the databases** via a Web address, which allows access from anywhere in the world.

- Unifies the system without each individual user having to add software or hardware. As an application service provider, GraphOn is responsible for the **installation and maintenance** of the system.

- Few of the scientists have working knowledge of Unix; Bridges gives them **access** via a Web browser.

- Bridges **instantly turns** any desktop-enabled program into a Web-enabled program without changing any code.

- Bridges gives added **security** by creating a single way to access the databases, reducing the number of vulnerabilities.

The databases are updated nightly, so information is always being added, Dalton explained.

Bioinformatics combines biological sciences with practical computer knowledge —

especially with techniques for using a computer to simplify data.

For example, the mapping of human genes is such a cumbersome process that an extensive database is needed just to store parts of the genetic code information.

To make matters more complex, the inconsistency of programs used to access the applications caused the system to slow down because the X server would have to send different X protocols to different X interfaces.

"How could we share information if everyone was using a different program?" Sensen said, adding that it was also difficult for each user to maintain his own software.

Bridges is ideal because the scientists just have to click on a Web site address to gain access to the Unix databases, according to Dalton.

Instantly Web-Enabled

The Bridges technology allows a desktop-enabled program to instantly become a Web-based program, without changing any code, Ford said.

Because the program is centralized, Sensen said, it's easier for all the users to access it.

Before the NRC deployed Bridges, slow connections

often prevented researchers from being able to access the databases, according to Dalton and Sensen.

"There are hundreds of users across the country. They need something to allow them to go into the database without thinking," Sensen said.

Dalton noted that security was also a concern because the old system had many access points, which left the system vulnerable.

Each member had an individual point of entry via his own computer and software, but Bridges now allows all the members of the CBR to access the databases through a single address.

Sean Hemmingsen, a senior research officer at the NRC, said the Bridges system has greatly improved the network. "This gives us the functionality and connectivity that we didn't have before," he said.

Bridges allows users to run Unix applications from any desktop, thick or thin. The application can be transmitted over anything, from a slow dial-up modem to a high-speed LAN, said Ford.

Prices start about \$300 per user, but large organizations can get discounted rates. ■

