Special Report

Distant Data at Arm's Reach

While UCSD's Supercomputer Center Tackles Data Storage Challenge, an Old Friend Takes the Product to Market

■ **BY BRAD GRAVES**

A company specializing in exotic technology has carved out a new division to bring some California-bred software to the commercial market.

General Atomics announced last week that UC San Diego had granted it an exclusive license to market a line of software to manage huge, dispersed silos full of data.

GA will take the software to market through a new, 12-person division called Nirvana.

The staff at the San Diego Supercomputer Center, on the UCSD campus, has been working on the software since 1995, using an estimated $20 million in federal grants. General Atomics has put $5 million more into the effort to commercialize it.

Both figures come from Constantin Scheder, director of General Atomics' Nirvana Division.

The software is called SRB. That's short for Storage Resource Broker.

SRB can link a variety of geographically distant databases – even databases built with mismatched software, such as Windows and Linux.

Using SRB, a person can get into distant files with a desktop computer's Web browser – something along the lines of Netscape Navigator or Microsoft Internet Explorer.

Scheder speaks of connecting "federations" of computers by using the software.

SRB is a powerful chunk of code – though when many people hear the product was developed at the San Diego Supercomputer Center, Scheder said, they jump to the wrong conclusion.

"People think, 'Oh, yeah, it only works with supercomputers or a high-bandwidth environment,'" Scheder said. "But that's not the case."

Terms of the licensing deal between GA and UCSD were not disclosed.

Yet it's a sign that when it comes to the Supercomputer Center, a symbiotic relationship still exists between General Atomics and UCSD.

That relationship is deep. It goes back to the center's beginnings.

• **Professional Partnership**

General Atomics scientists set up the San Diego Supercomputer Center in 1985 on the UCSD campus, using a National Science Foundation grant. A new Cray X-MP supercomputer was the focus of the project.

A *San Diego Union* report from the time said GA got involved because it had experience with supercomputers at Lawrence Livermore National Laboratory.

General Atomics went on to operate the center for 11 years. The GA-UCSD relationship grew strained in the mid-1990s when it was time to bid for a new National Science Foundation grant to support the Supercomputer Center. For a time it looked as though the two institutions would seek federal funding as competitors. However, by 1996, UCSD announced it would submit a proposal as the lead agency, with General Atomics on its team.

Today the center is completely under the wing of the university.

The Storage Resource Broker software, or middleware, builds on the work of Reagan Moore.

Moore, who has a doctorate in plasma physics from UCSD, has been with the Supercomputer Center since its beginning. Before that he worked at GA as a computational plasma physicist.

Neal Blue, GA's chairman and chief executive, credits Moore for recognizing more than 10 years ago that a system like SRB would be needed now and in the future, "to support the explosive growth of data and distributed high-performance computing."

Large organizations have data stored in different systems, from different vendors, across the world.

Finding data gets difficult if a person doesn't know the specific storage location or the name of the sought-after file.

SRB's internal catalog keeps track of those details. It also keeps track of who is authorized to get into what file. If you're not supposed to get into it, Scheder said, SRB won't show you it's there.

As middleware, SRB is sandwiched between other programs, like browsers and other specialty applications. It sits there discreetly; GA boasts SRB is "transparent."

Other selling points: The software is scalable and works to store data in the most efficient places possible. For example, with some general instructions from a system administrator, SRB's "policy engine" may decide some files from the 1980s would go better on a tape drive in Cleveland, freeing up space in the new storage area network for current projects. And the user will be none the wiser.

Scheder said the software architects are continuously adding features and improvements.

So far several federal agencies and academic institutions have put the software to work.

• **Finding A Market For 'Middleware'**

Blue said that GA created the Nirvana division in 2001 specifically to develop, deploy, and commercialize SRB.

Scheder said Nirvana will be marketing the software for work in the pharmaceutical, oil and gas, financial services, and airline industries.

Companies in those sectors are already trying out the software, Scheder said, though none has bought it. Scheder declined to name the companies.

A license for a typical implementation may start at $200,000, Scheder said. A large enterprise computer system may pay upwards of $1 million, he added. Nirvana plans to charge annual maintenance fees of 15 percent of the license fees.

General Atomics is using the software to get its paper files in order. The company has a repository of documents and drawings going back to its beginning in the 1950s.

As its name implies, General Atomics has a background in nuclear reactors. It has worked on exotic engineering challenges such as nuclear fusion and magnetic levitation for transportation.

Its Aeronautical Systems unit builds the Predator series of remote-controlled military aircraft, as well as some of the sensors used on the aircraft.

The company employs 3,000 people worldwide, including 1,500 scientists. General Atomics is privately held and does not disclose revenues.