ORIGINATING TECHNOLOGY/
NASA CONTRIBUTION

In 1992, NASA and the U.S. Department of Defense jointly commissioned the research and development of a technology solution to address the challenges and requirements of communicating with their spacecraft. The project yielded an international consortium composed of representatives from the space science community, industry, and academia. This group of experts developed a broad suite of protocols specifically designed for space-based communications, known today as Space Communications Protocol Standards (SCPS). Having been internationally standardized by the Consultative Committee on Space Data Systems and the International Standards Organization, SCPS is distributed as open source technology by NASA's Jet Propulsion Laboratory (JPL). The protocols are used for every national space mission that takes place today.

PARTNERSHIP

Engineers from Global Science & Technology, Inc. (GST), of Greenbelt, Maryland, were the principal developers of the SCPS suite of protocols. The company's chief engineer was the lead architect for the SCPS transport protocol, and GST personnel authored the SCPS Rationale Green Book. Many of the company's protocol engineers played integral roles in early SCPS development, including some of the first testing and operational deployments of the technology. Today, GST represents NASA at the Consultative Committee on Space Data Systems, and leads several international space networking consortia, including the Interplanetary Networking Research Group.

It was a natural extension of GST's business to take its SCPS research and development effort and transfer it into the commercial satellite and wireless markets. In 2000, the company began commercializing the transport protocol component of the SCPS suite. The development of this transport protocol was funded by NASA's Goddard Space Flight Center at the start of the original research and development project. This funding was critical in defining the need for the technology, crafting the specification for the protocol, and building the reference implementation that served as the blueprint for what eventually would become SkipWare,® the commercial implementation of the SCPS transport protocol.

While no formal technology transfer partnership between GST and NASA was necessary for the company's commercialization efforts, GST alerted all the relevant parties within NASA of its intentions to productize SCPS, and kept them apprised of its progress as the technology went to market. Recognizing GST's unique lineage with the technology, NASA showed great support for the company's intention to commercialize SCPS, and continues to support its efforts as the technology expands into new products and markets.

Today, NASA funds the maintenance of the SCPS reference implementation (an open-source blueprint of the code on which SkipWare is loosely based) through JPL, which serves to promote the SCPS technology within both the Federal technology sector and the commercial wireless market. Both JPL and Goddard generally promote SCPS within the space community, and wherever appropriate, will direct potential customers interested in the SCPS technology to GST and the SkipWare line. The company continues to work closely with interested parties at Goddard to keep them informed of SkipWare releases, new product features, and new market applications of the technology. GST also actively solicits input from NASA

Comtech EF Data, a satellite products company, distributes SkipWare® as an embedded service on its hardware platforms.

Comtech EF Data's *turbo*IP™ is the primary hardware platform bearing SkipWare® software.

regarding future requirements for space networking and how it can best develop its technology to meet the needs of the space community. The company maintains an ongoing dialogue with the space networking experts within NASA, and this affiliation promises to help promote and advance the SkipWare product.

PRODUCT OUTCOME

Global Protocols, Inc., an independent company spun off from GST for the purposes of commercializing its wireless protocol line, distributes SkipWare as a software license and as an embedded service on the hardware platforms of its partner, Comtech EF Data, a satellite products company based in Tempe, Arizona. SkipWare mitigates or eliminates the obstacles associated with wireless and satellite transport and provides efficient, reliable transmission over these media. Global Protocols has sold the technology to customers operating in the satellite, terrestrial wireless, and wireless telemetry markets, and its customer base includes major wireless Internet Service Providers both domestically and internationally, as well as every U.S. military branch.

Since being adopted as the military standard for stressed wireless networking, sales of SkipWare-enabled platforms in the military wireless market have increased substantially. The primary hardware platform bearing SkipWare is *turbo*IP,™ a rackmount accelerator manufactured and distributed by Comtech EF Data. Developed through a collaborative partnership between Global Protocols and Comtech EF Data, *turbo*IP represents a technology breakthrough in Internet-over-satellite platforms, combining high performance with open standards and network interoperability. These platforms sell at a rate of approximately 100 units per month, and generate significant support and engineering services revenues after each sale.

Offering both router mode and abridged mode (EasyConnect™), *turbo*IP provides unprecedented ease-of-installation while reducing maintenance (training) costs. Network availability is enhanced with *turbo*IP by addressing the single-point-of-failure issue using fail-to-wire technology. This technology ensures network connectivity in the event of any *turbo*IP failure including loss of power. Global Protocols and Comtech EF Data are continuing collaborative efforts and will, later this year, offer increased high-end features includ-

ing Lempel-Ziv datagram compression and Selective Acceleration (patent pending).

Global Protocols has increased its engineering staff to meet the demand for its protocol engineering and integration services, and expects to continue to grow this business as new wireless media markets prosper. Having defined protocol engineering as a marketable service and having established SCPS as the standard in wireless data transport, several other companies have entered the market. Due in large part to NASA Goddard's vision and its forecasts for the need of high-performance protocols in wireless media, a new and prosperous business line is forming within the wireless communications market.

SkipWare® is a registered trademark of Global Protocols, Inc.

EasyConnect™ and *turbo*IP™ are trademarks of Comtech EF Data.

Selective Acceleration is patent pending Comtech EF Data.