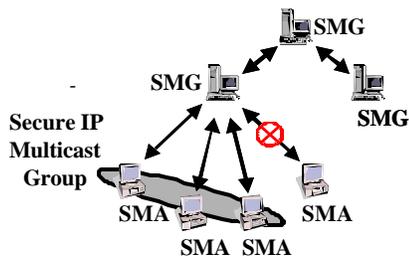


**Topic No: N99-172**



## Scientific Research Corporation (SRC)

2300 Windy Ridge Parkway  
Suite 400 South  
Atlanta, GA 30339  
<http://www.scires.com>

SRC is a provider of high-tech products and services to government and commercial customers requiring innovative communications, signal intelligence and radar systems. SRC's networking expertise includes wireless communications, mobile ad-hoc networking, quality of service policy management, security/key management, hardware-in-the-loop simulations, and covert waveform development.

**SRC POC:** Robert Figucia  
978-604-4353  
[rfigucia@scires.com](mailto:rfigucia@scires.com)

**Navy POC:** Yuh-Ling Su  
858-537-0149  
[yuh-ling.su@navy.mil](mailto:yuh-ling.su@navy.mil)

**SBIR Investment:** \$850K

**Non-SBIR Investment:** \$2,250K

## Secure Internet Protocol (IP) Multicast (SIM)



### About the Technology

Scientific Research Corporation (SRC) has developed a secure internet protocol (IP) multicast (SIM) solution that is compatible with existing Navy shipboard networks and various voice compression algorithms. The result is a robust combination of voice quality and bandwidth utilization for the Navy's wireless environment. SRC's software-based SIM solution combines the bandwidth efficiency of multicast with the confidentiality of IP security (IPsec) for need-to-know separation in a security domain. Multicast group management provides scalable, secure, and manageable data networking for Type 1 encrypted traffic - common for inter-ship tactical wireless links. The SIM architecture enables centralized network administration by separating the process-intensive operations of traffic encryption and key management.

### Benefits to PEO C4I&Space and Other DOD Programs

SIM addresses shortfalls in commercial IP implementations (specifically, the absence of secure IP multicast and low bit rate support) to provide the Navy's Automated Digital Networking System (ADNS) and other DOD programs with a solution for secure, digital compressed voice in both multicast and unicast modes. Integration of SIM with the Naval Research Laboratory's Secure Voice 21 gateway allows desktop workstations to communicate with legacy single channel ground and airborne radio systems over secure IP multicast channels. Ongoing developments are migrating SIM functionality from workstation to desktop phones and wireless terminals with Type 1 encryption (e.g., secure wireless local area network-11) for more flexible on-ship secure wireless communications.

### Why SIM Improves the Technology

- SIM enhances support of confidential group communications by combining non-reputable multicast group membership, source authentication, and data-encryption key generation.
- Military grade IPsec encryption (Type 4 ciphers) provides confidentiality that is transparent to user applications.
- Public key infrastructure (PKI) common access cards and multicast key distribution enable robust key and group management.

### Military and Commercial Significance

- A Phase III contract was awarded to integrate SIMs with legacy Navy communication networks such as Secure Voice-21 Gateway.
- SIM technology uses a standard IP structure capable of interfacing with commercial routers, low-rate radio frequency modems, and multiplexers. This is particularly adaptable to hardened phones and wireless handsets.
- By enabling multicast in secure IP networks, SIM greatly decreases network loading compared to redundant uni-cast transmissions. This is particularly beneficial for commercial voice and video conferencing applications.

