

SatCom For Net-Centric Warfare

June 2011

MilsatMagazine

Now published monthly



**Lt. Gen. Tom Sheridan
Space & Missile Center
Celebrating A Successful Career**

INTEL

KEYS TO IMPROVING ON-THE-MOVE COMMUNICATIONS FOR THE WARFIGHTER

author: Rick Lober, Vice President + General Manager,
Defense & Intelligence Systems, Hughes



Communications-on-the-move (COTM) is vital to U.S. military and intelligence missions at home, abroad, and in theater. Even in a time of leaner budgets, the current threat landscape requires the military to continue advancement of net-centric communications, together with intelligence, surveillance, and reconnaissance (ISR) capabilities. Increased use of satellites is essential to maintain over-the-horizon communications for command and control (C2) and ISR missions, requiring ever more efficient use of high-capacity bandwidth in theater. Faced with these challenges and the reality of tight budget constraints, the military needs to reexamine how to provide the highest quality COTM solutions to troops, while limiting operational costs.

Bandwidth Efficiency

Many of today's **C2** and **ISR** missions employ COTM solutions with very high data rates. Although appropriate for some missions, C2 functions often only have need for limited data rates, and current technologies may not utilize the excess bandwidth efficiently. By deploying commercial products designed with managed bandwidth technologies, the military can significantly improve its bandwidth efficiency for **COTM** (*Communications-On-The-Move*) terminals. At Hughes, our latest generation commercially developed modems employ technologies to deliver the highest bandwidth efficiency available, while promoting secure and robust networks that meet the unique needs of the military community.

Antenna Size

Though antenna technology and designs are advancing, today's land mobile COTM versions are still expensive and often cumbersome in the field. As a result, COTM deployments will not see large scale use until antenna cost and size are significantly reduced. Modem technologies that employ advanced modulation and coding schemes can be key to achieving compact and cost-efficient antenna designs. As a case in point, **Hughes** has recently developed several commercial small antenna prototypes currently in field testing that operate with modems employing advanced modulation and forward error correction codes, resulting in greater mobility and much lower cost for both Ku-band and Ka-band COTM solutions.

Resource Management

The networking needs of warfighters are complex and ever-changing. An operation may begin with an aerial campaign and

rapidly switch to a ground attack, requiring different satellite resources. Satellite communications (SatCom) networks must therefore be nimble and responsive to meet these rapidly-changing needs, which requires integrated situational awareness (SA) and dynamic allocation of resources. Many current DoD networks are provisioned based on anticipated demand, meaning commanders must predict the capacity well in advance of operations.

Commercial satellite platforms can provide a model for more efficient capacity management. For example, our commercially successful **SPACEWAY® 3** switch-in-the-sky satellite and ground-based *Network Operations Control Center (NOCC)* provides Hughes with dynamic resource allocation of 10 Gbps of Ka-band traffic capacity, which can also be combined with terrestrial fixed and/or wireless networking as required to deliver the most bandwidth efficient, combined ground/satellite solutions. Simplified network set-up in tactical situations is powered by the Hughes **ExpertNMS** network management software and its highly interactive, user friendly GUI interface, available with our latest VSAT systems. Such a consolidated, end-to-end network management system will transform warfighter COTM whether at home or abroad.

The Future

Hughes is committed to developing the most advanced and cost efficient COTM solutions to help our military customers maintain over-the-horizon communications anywhere in the world — delivering innovative solutions that stay within budget constraints. The Company looks forward to continuing to work with military partners to enable effective and critical net-centric communications in any mission location or setting.

About the author

Rick Lober joined Hughes in late 2008 as the Vice President and General Manager of the Defense and Intelligence Systems Division. He has over 25 years experience with both COTS-based and full MIL communications and intelligence systems starting as a design engineer and progressing to a P&L executive. He has previously worked at Cubic Communications, Inc. and Watkins-Johnson Company and received his BS and MSEE degrees from the University of Illinois,

