



## **Satellites: A Key Component of End-to-End Communications Solutions**

Satellite communications services are critical to the economic and national security of the United States. They provide reliable communications to energy and natural resources companies, government agencies, the news media, public safety officials and first responders, search and rescue units, and the U.S. military. Increasingly, consumers seek end-to-end communications solutions that are reliable and robust. Typically this requires more than one communications technology. . This white paper details the advantages that satellite communications networks provide when used as part of an integrated end-to-end communications solution. For the purposes of this paper, integrated end-to-end communications solutions will refer to those networks where satellite-based capabilities augment terrestrial wired and wireless networks, each operating in separate frequency bands (as distinct from MSS/ATC or ancillary terrestrial networks, where terrestrial capabilities operate in MSS bands).

SIA is a U.S.-based trade association providing worldwide representation of the leading satellite operators, service providers, manufacturers, launch services providers, and ground equipment suppliers.<sup>1</sup> Since its creation fifteen years ago, SIA has become the unified voice of the U.S. satellite industry on policy, regulatory, and legislative issues affecting the satellite business.

### *Path Diversity*

Modern communications networks are heavily reliant on terrestrial networks. The incorporation of multiple technology platforms, including satellite-based communications, is an essential aspect for network architectures with robust path

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<sup>1</sup> SIA Executive Members include: Artel, Inc.; The Boeing Company; CapRock Communications, Inc.; The DIRECTV Group; Hughes Network Systems, LLC; DBSD North America, Inc.; EchoStar Satellite Services, LLC; Integral Systems, Inc.; Intelsat, Ltd.; Iridium Communications Inc.; LightSquared; Lockheed Martin Corporation.; Loral Space & Communications, Inc.; Northrop Grumman Corporation; Rockwell Collins Government Systems; SES WORLD SKIES; and TerreStar Networks, Inc. SIA Associate Members include: Arqiva Satellite and Media; ATK Inc.; Cisco; Cobham SATCOM Land Systems; Comtech EF Data Corp.; DRS Technologies, Inc.; Eutelsat, Inc.; GE Satellite; Globecom Systems, Inc.; Glowlink Communications Technology, Inc.; iDirect Government Technologies; Inmarsat, Inc.; Marshall Communications Corporation.; Orbital Sciences Corporation; Panasonic Avionics Corporation; Segovia, Inc.; Spacecom, Ltd.; Spacenet Inc.; Stratos Global Corporation; TeleCommunication Systems, Inc.; Telesat Canada; Trace Systems, Inc.; and ViaSat, Inc. Additional information about SIA can be found at <http://www.sia.org>.

diversity and ensured continuity. Maintaining and expanding access to satellite networks complements and strengthens existing terrestrial communications architectures.

### *Expanded Capabilities*

Because each communications technology has its limitations, the most robust networks will be those incorporating multiple technologies. Satellite-based communications offer wide geographic coverage, with some satellites capable of providing coverage to as much as a third of the earth's surface. This coverage gives satellite communications the ability to link widely-distributed networks, serve as always-on instant infrastructure, and provide mobile connectivity for a variety of applications.

Satellite communications links are currently incorporated in a diverse set of networks, including: private corporate networks that use both terrestrial and satellite links to connect the widely-dispersed locations common in the retail, banking, and natural resource industries; as complements to terrestrial fiber networks and undersea fiber-optic cables; as backhaul for cellular networks and expansion to remote areas; and as middle-mile connectivity for terrestrial wireless broadband networks in remote and hard-to-reach areas.

### *Applications are the Key*

What matters for consumers is that the communications they need are provided effectively. Satellite technologies offer the coverage needed to achieve universal broadband access in a cost-effective way and provide access where terrestrial technologies do not. Satellite communications solutions are also uniquely suited to extending communications networks in support of government missions in remote areas, such as those performed by U.S. Customs and Border Patrol and the U.S. National Parks Service.

### *Satellite Networks Support Flexibility and Mobility*

The U.S. military, first responders, and disaster relief groups expect assured connectivity even while mobile. When terrestrial communications networks need to rapidly expand their capacity to operate in previously unserved areas or to accommodate surge requirements from an unexpected event, satellite networks provide unrivaled flexibility and support increased mobility. As laid out in the Blueprint for the Army of the 21<sup>st</sup> Century, satellite networks can provide tactical communications while mobile 3G and 4G networks are being established, and can provide backhaul once those mobile networks are online.

## *Satellite Networks are Dynamic*

Satellite networks have traditionally offered critical point-to-point and point-to-multipoint communications in the U.S. and around the world. With recent technological advances, satellites with on-board processing capabilities can erase the distinction between terrestrial and space-based communications nodes by dynamically routing and processing communications signals before they are re-transmitted back to ground stations. The satellite industry provides communications networks with the mesh connectivity so critical to continuing government operations and enabling emergency management activities. These satellite routing capabilities can establish connections among government managers within and among agencies that need to stay connected with each other in order to coordinate relief and recovery efforts. Complementing terrestrial networks, these services can provide both “Plan A” and “Plan B” communications networks that will keep government agencies operational when they are needed most.