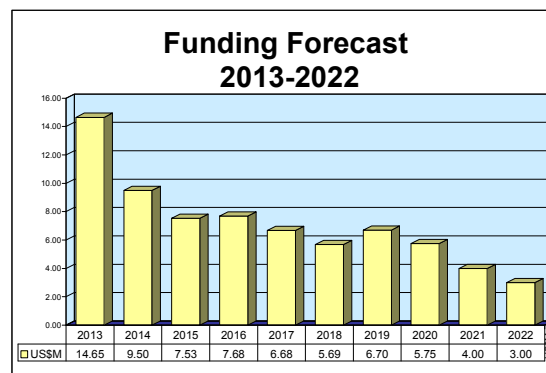


# Global Broadcast Service (GBS)

## Outlook

- FI projects that the USAF will spend about \$71 million on operation and maintenance of, as well as RDT&E for, the Global Broadcast Service program over the next 10 years
- In FY13, look for the GBS program to continue to work toward developing a satellite broadcast management architecture and implementing systems transmission security



## Orientation

**Description.** The Global Broadcast Service (GBS) is a space-based communications system designed to provide high-data-rate communications for the United States armed services. The GBS transmits video imagery and other large data files. The purpose of the GBS is to help the U.S. armed services avoid using overloaded commercial and military communications channels.

### Sponsor

U.S. Air Force Space & Missile Systems Center  
Los Angeles Air Force Base, CA.

**Status.** Sustainment (operation, maintenance, and RDT&E).

**Application.** Communications

## Contractors

### Prime

<b>Booz Allen Hamilton</b>	<a href="http://www.bah.com">http://www.bah.com</a> , 8283 Greensboro Dr, McLean, VA 22102 United States, Tel: + 1 (703) 902-5000, Program Participant (Operation, Maintenance, RDT&E)
<b>General Dynamics C4 Systems, Taunton Site</b>	<a href="http://www.gdc4s.com">http://www.gdc4s.com</a> , 400 John Quincy Adams Rd, Taunton, MA 02780-1069 United States, Tel: + 1 (508) 880-4000, Fax: + 1 (508) 880-4800, Email: <a href="mailto:info@gdc4s.com">info@gdc4s.com</a> , Program Participant (Operation, Maintenance, RDT&E)
<b>Lockheed Martin Information Systems &amp; Global Services, Division HQ</b>	<a href="http://www.lockheedmartin.com/us/isgs.html">http://www.lockheedmartin.com/us/isgs.html</a> , 700 N Frederick Ave, Bldg 181, Gaithersburg, MD 20879 United States, Tel: + 1 (301) 240-7500, Program Participant (Operation, Maintenance, RDT&E)
<b>Raytheon Co</b>	<a href="http://www.raytheon.com">http://www.raytheon.com</a> , 870 Winter St, Waltham, MA 02451-1449 United States, Tel: + 1 (781) 522-3000, Fax: + 1 (781) 860-2520, Program Participant (Operation, Maintenance, Ongoing RDT&E)

Comprehensive information on Contractors can be found in Forecast International's "International Contractors" series. For a detailed description, go to [www.forecastinternational.com](http://www.forecastinternational.com) (see Products & Samples/Governments & Industries) or call + 1 (203) 426-0800.

Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; [rich.pettibone@forecast1.com](mailto:rich.pettibone@forecast1.com)

## Global Broadcast Service (GBS)

### Technical Data

**Design Features.** The Global Broadcast Service (GBS) provides high-data-rate connectivity between multiple distributing information sources and warfighters in need of information. The transmitted information can include logistics data, weather data, images, maps, and video. The time it takes to transmit information will be significantly shorter than for current systems, which take minutes or even hours.

The GBS satellite package is based on Raytheon's commercially available DirecTV. Data are transmitted to the GBS package aboard three Ultra High-Frequency (UHF) Follow-On (UFO) satellites. The data are then processed and assigned a transmission priority by a satellite broadcast manager (SBM) segment.

The SBM passes the data to one of three primary insertion points (Norfolk, Virginia; Hawaii; or the Indian Ocean) or to one of several theater insertion points. The satellites then transmit the data from three downlink steerable-beam antennas. Two of these antennas cover an area of 500 nautical miles in diameter and transmit information at rates of up to 24 Mbps. The third antenna covers an area of 2,000 nautical miles in diameter and transmits data at a rate of 1.5 Mbps.

Receiver terminals pick up the satellite data and convert it to an intermediate frequency, then pass the data on to a receiver-broadcast manager for decryption, processing, and transfer to users.

The GBS is expected to carry 520 times more information over existing communications systems than is currently carried. The GBS will link communications via military satellites, leased commercial satellite transponders, fiber-optic lines, and radio networks. The GBS will also be used on other information systems, such as the Pentagon's Secure Internet Protocol Router and on elements of the Global Command and Control System.

Two classes of service will be offered: inter-theater and intra-theater. Inter-theater will provide information from the continental United States to the theater of activity through a primary uplink to a broadcast satellite. Intra-theater services will focus on information from the commander-in-chief, or commander of the joint task force, and transmit through the primary uplink or a mobile uplink to the broadcast satellite.

### Program Review

#### *The GBS Program Begins*

In August 1995, the U.S. Joint Requirements Oversight Council (JROC) produced a mission need statement initiating the Global Broadcast Service (GBS) program. As stated by the JROC, the purpose of the GBS program is to provide worldwide, satellite-based, high-data-rate communications broadcast capability to the U.S. armed services. In March 1996, the U.S. Air Force was designated executive agent for the GBS program.

Program funding for the GBS began in 1996. Money was allocated to NSA-COMSEC (National Security Agency-Communications Security) for development of fast-lane algorithms and receiver terminal chips. The U.S. Navy was allocated funds for the acquisition of the Phase II UFO satellite antenna for theater injection.

Work in 1997 focused on engineering support and systems integration. In 1998, efforts included work on the initial communications connectivity and interface. Work also continued on Navy terminals and the Joint Spectrum Center.

#### *GBS First Used in Operation Enduring Freedom*

The GBS program conducted system development and testing in 2000. The Global Broadcast Service was first deployed in 2001 to support Operation Enduring Freedom. Since then, the GBS has become a primary means of moving information that requires high-capacity connectivity.

In 2002, the GBS program began replacing asynchronous transfer mode (ATM) technology used for the previous generation of GBS receivers with Internet Protocol version 6 (IPv6) technology. IP technology provides the GBS with the ability to transmit more information, as well as transmit data more efficiently. IP technology also allows Raytheon to make the receive suites smaller.

On October 12, 2004, the first GBS transmission station became IP-enabled in Wahiawa, Hawaii (that station can now simultaneously broadcast IP and legacy ATM signals). By mid-2005, Raytheon had finished upgrading the GBS transmission station in Sigonella, Italy, to an IP-based architecture.

## Global Broadcast Service (GBS)

### *GBS Enters Sustainment Phase*

In October 2005, the GBS program officially entered the sustainment phase (operation, maintenance, and RDT&E) with the award of a \$49.9 million contract to Raytheon to provide full sustainment support for fielded portions of the Global Broadcast Service. In 2007, the U.S. Air Force awarded Raytheon three contract modifications for work associated with sustainment of the GBS.

In May 2008, Raytheon announced that the U.S. Army Communications-Electronics Command had awarded the company an \$11.74 million contract for production and delivery of 205 GBS transportable ground receive suites and associated spares. The suites permit Army mobile users at the edge of the battlefield to receive data and video broadcast products and process them for use by military decision-makers and frontline troops.

In October 2008, the U.S. Air Force awarded Booz Allen Hamilton a contract modification to provide systems engineering and integration support to the Military Satellite Communications Wing's Space and Missile Systems Center for the GBS program and the

Joint Terminal Engineering Office through October 21, 2009.

### *Lockheed Wins DECC Transition Contract*

In May 2009, the U.S. Air Force announced that it was awarding the U.S. Air Force GBS Satellite Broadcast Manager (SBM) Defense Enterprise Computing Center (DECC) transition contract to Lockheed Martin (see **Contracts/Orders & Options** section). The contract transitions GBS broadcast functionality to a centralized DECC and positions the GBS system to meet the evolving needs of the warfighter.

In September 2010, Raytheon announced that it had delivered the final phase of expanded GBS full-motion video capabilities to improve the video imagery intelligence available to warfighters.

PE#0603840F, Global Broadcast Service funds GBS program research and development activities. From FY11 through FY12, the PE worked toward developing a satellite broadcast management architecture and implementing systems transmission security (TRANSEC). Forecast International expects this work to continue in FY13.

## Funding

### U.S. FUNDING

	FY11 <u>QTY</u>	FY11 <u>AMT</u>	FY12 <u>QTY</u>	FY12 <u>AMT</u>	FY13 <u>QTY</u>	FY13 <u>AMT</u>
<b>RDT&amp;E (U.S. Air Force)</b>						
PE#0603840F, Global Broadcast Service	-	25.79	-	5.63	-	14.65
	FY14 <u>QTY</u>	FY14 <u>AMT</u>	FY15 <u>QTY</u>	FY15 <u>AMT</u>	FY16 <u>QTY</u>	FY16 <u>AMT</u>
<b>RDT&amp;E (U.S. Air Force)</b>						
PE#0603840F, Global Broadcast Service	-	TBD	-	TBD	-	TBD

All \$ are in millions.

Source: U.S. Department of the Air Force FY13 RDT&E budget document

TBD = To Be Determined.

## Global Broadcast Service (GBS)

### Contracts/Orders & Options

<u>Contractor</u>	<u>Award (\$ millions)</u>	<u>Date/Description</u>
Raytheon	49.9	Oct 2005 – A cost-plus-fixed-fee, firm-fixed-price contract from the U.S. Air Force to provide full sustainment support for fielded portions of the Global Broadcast Service. This contract will transition support from a development program to sustainment. It includes sustaining engineering/technical services, operation and maintenance of GBS satellite broadcast managers and primary injection points, repair services and spares support, and software support/maintenance. This work was scheduled to be completed by Oct 2010. Ogden Air Logistics Center, Hill Air Force Base, UT, is the contracting agency. (FA8207-06-D-0001)
Booz Allen Hamilton	9.95	Oct 2007 – U.S. Air Force contract to provide systems engineering and integration (SE&I) services for the Military Satellite Communications Systems Directorate (MILSATCOM) Space and Missile Systems Center in support of the GBS program and the Joint Terminal Engineering Office (JTEO). For JTEO, the contractor would provide systems and network engineering for, and test and evaluation & development oversight of, all MILSATCOM terminal systems. For GBS, the contractor would implement current and future SE&I program plans; define current and future system architecture requirements; analyze alternative approaches for integrating, procuring, fielding, migrating, staging and supporting GBS systems; and ensure adherence to DoD policy, industry standards, and engineering best practices. MCSW/PKA, El Segundo, CA, is the contracting agency. (FA8808-07-F-0003)
Lockheed Martin Corp	43.04	May 2009 – Contract from the U.S. Air Force to transfer the satellite broadcast management functions of the GBS to the Defense Enterprise Computing Center, complete with new hardware and software architecture, by FY10. 653 ELSG/KCK, Bedford, MA, was the contracting activity. (FA8726-09-C-0006)

### Timetable

<u>Year</u>	<u>Major Development</u>
FY96	GBS program begins
FY97	GBS program focuses on engineering support and systems integration
FY98	Work centers on initial communications connectivity
FY00	System development and testing
FY01	U.S. Air Force awards Raytheon a contract to provide additional support to the GBS program
FY02	GBS Phase II government system integration efforts
FY03	GBS system development and testing
2004	The first GBS transmission station becomes IP-enabled in Wahiawa, Hawaii
2005	GBS program transitions to the sustainment phase
2009	U.S. Air Force awards GBS SBM DECC transition contract to Lockheed Martin
2010	Raytheon announces delivery of the final phase of expanded GBS full-motion video capabilities
FY11-13	PE#0603840F, GBS working to develop a satellite broadcast management architecture and implement systems transmission security

### Worldwide Distribution/Inventories

The Global Broadcast Service is a U.S. Department of Defense program. The GBS may be shared with U.S. allies.

**Global Broadcast Service (GBS)****Forecast Rationale**

The Global Broadcast Service, or GBS, is a space-based communications system designed to provide high-data-rate communications for the U.S. armed services. The GBS transmits video imagery and other large data files. The purpose of the GBS is to help the U.S. armed services avoid using overloaded commercial and military communications channels. The armed services' need for an alternative to overloaded channels is driving this program's funding stream.

The GBS program is currently in a sustainment phase. According to a U.S. Air Force RDT&E budget document, the Air Force requested over \$14 million in FY14 for RDT&E activities associated with the GBS program. Forecast International anticipates this amount will drop sharply to about \$9.5 million in 2015, with funding then expected to average about \$5.9 million each year after that, right into the early part of the next decade.

**Ten-Year Outlook**

<b>ESTIMATED CALENDAR YEAR RDT&amp;E FUNDING (in millions \$)</b>												
<b>Designation or Program</b>		<b>High Confidence</b>				<b>Good Confidence</b>			<b>Speculative</b>			
	<b>Thru 2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>Total</b>
<b>MFR Varies</b>												
<b>Global Broadcast Service Military &lt;&gt; United States &lt;&gt; Air Force</b>												
<small>Note: Funding is for operation, maintenance, and ongoing RDT&amp;E.</small>												
	62.57	14.65	9.50	7.53	7.68	6.68	5.69	6.70	5.75	4.00	3.00	71.18
<b>Total</b>	62.57	14.65	9.50	7.53	7.68	6.68	5.69	6.70	5.75	4.00	3.00	71.18