

Broadband Internet Service for Residential and Small Office/Home Office (SurfBeam® and WildBlue Services)

WildBlue Background

Thanks to the innovation of an advanced Ka-band broadband system, WildBlue is now the premier Ka-band broadband service in the world. The affordable, two-way broadband service is available to virtually any residence or small office/home office throughout the contiguous United States. Since its rollout in mid-2005, subscriptions have quickly grown to more than 400,000 customers. WildBlue sells its service through a network of more than 1,500 independent retailers, and through wholesale relationships and partnerships with DISH Network, DIRECTV, NRTC, AT&T, and Qwest. The service is especially appealing to the 10 to 12 million U.S. homes without access to DSL or cable service.



The primary objectives of the technology behind WildBlue are to reduce the cost of providing satellite broadband and to make it easier to provision and manage subscriptions. Advanced spot beam, bent-pipe satellite technology and an innovative ground system design were the first steps.

The Beginnings of Frequency Re-use to Lower Bandwidth Costs

Spot beam satellites focus multiple, high-powered beams onto the earth, with each beam covering a specific geographic region, similar to the cells of a wireless phone network. This technology produces an increase of four to six times the capacity of conventional Ku-band satellites that have only one large beam or "footprint", generally covering an area slightly larger than the continental U.S.

WildBlue launched its service using all of the U.S. Ka-band capacity on the Telesat Anik F2 satellite. Then in March 2007, WildBlue launched service on its own satellite, WildBlue-1. As the first full Ka-band spot beam commercial satellite, WildBlue-1 immediately tripled the capacity of the network.

Building From Terrestrial Technology Makes Satellite Simpler and More Affordable

Perhaps as important as choosing spot-beam technology is another aspect of the WildBlue strategy; building a satellite system based on well-proven and mass produced technology already in use by millions of broadband customers.

The initial WildBlue service is based on the cable industry's Data Over Cable Service Interface Specification (DOCSIS®). By adapting a widely-used communication standard to satellite, WildBlue leveraged millions of dollars in investment for its own use, including mass-produced chipsets, scalable hub hardware, and customer premises equipment.

To adapt the system to satellite, WildBlue chose ViaSat as its technology partner. ViaSat engineered a satellite modem, a compact Ka-band transceiver, and the satellite modem

termination system (SMTS), which is the baseband "headend" of the network. (ViaSat acquired WildBlue in 2009).

System Elements Combine to Deliver Mass Market Scale

The satellite modem, similar in size and function to a DSL or cable modem, converts the analog data transmissions into Internet Protocol (IP) data packets, which can be read by subscriber PCs or any digital Internet appliance. ViaSat technology enables WildBlue to leverage standard components while ensuring the design provides excellent performance over the Ka-band satellite link.



Another key part of the terminal technology provided by ViaSat is the outdoor satellite transceiver. The 3-watt linear output power transceiver is an integrated, compact package, operating at transmit frequencies of 29.5 to 30.0 GHz and receive frequencies of 19.7 to 20.2 GHz. As with the other system components, this low-cost transceiver is key to making the cost of the customer equipment affordable to the average consumer.

At each WildBlue gateway location, the ViaSat SMTS provides the interface between a high-speed terrestrial Internet backbone and WildBlue subscribers. The SMTS controls the access network, acts as an IP router/switch to communicate with and manage the traffic for each subscriber satellite modem, and performs authentication and encryption for subscribers. Thirteen WildBlue gateways throughout the U.S. and Canada provide high-speed connections to the Internet via a redundant fiber backbone.

Coming Soon – A Leap Forward in Performance for Satellite Broadband

The demand for broadband by satellite is indisputable, as is the growing demand for more bandwidth. Each time WildBlue has added capacity to its network, a spike in subscriber uptake followed. Today, WildBlue cannot meet the demand of the market and capacity is sold out in key geographic areas, which has limited subscriber growth. Consumers are also expecting more and more performance from their broadband connections, as demand for video and other multimedia continues to accelerate.

With the right technology, satellite can provide that kind of great user experience, equaling median DSL or cable services.

To remedy the capacity crunch, ViaSat has engineered a transformational, high-capacity satellite system, including both the satellite and a next-generation SurfBeam 2 ground system. The combination produces a quantum leap forward in satellite capacity, increasing total bandwidth available by a factor of 10 compared to any current system.

With abundant bandwidth volume to allocate to each subscriber, this new satellite system is engineered to deliver a new level of speed and service quality – an economical, high-volume, media-enabled service – for the first time.

The debut of this exciting new level of service will begin in 2011 with its rollout to customers of Eutelsat ToowaySM in Europe and WildBlue in North America.