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Globalstar delivers outstanding voice and data quality around the world by leveraging their extensive network of low-earth orbit satellites and regional gateways to deliver a superior customer experience. To understand why technology gives Globalstar a distinct advantage over other satellite providers, some background information is required on satellites, gateways, call flows, Path Diversity™, and wireless technology.

**Satellites**
There are primarily two different types of satellites used to deliver voice and data services to customers: LEO (low-Earth Orbit) and GEO (geostationary Orbit). Globalstar has built their network using LEO satellites because of their ability to deliver superb voice quality.

Globalstar's satellites orbit 1,414 km (878 miles) above the earth's surface, and take less than two hours to complete a full rotation. Their relative proximity enables voice and data signals to travel quickly, resulting in crisp, clear, reliable communications. Even customers using low powered mobile satellite devices, such as handheld phones, can expect digital voice quality that is comparable to cellular. Given their speed and the vast number of satellites in orbit, coverage gaps are minimal and typically correct within minutes. The LEO satellites communicate easily with Globalstar's devices using omni-directional antennas since they only need a clear line-of-sight to the sky to work, not specific calibration.

In comparison, GEO satellites orbit roughly 36,000 km (22,369 miles) above the earth's surface, and move with the earth, never changing location. Perceptible voice delays or echoes can occur because of the significant distances involved in transferring signals. GEO satellite devices are relatively expensive, and use directional antennas which must be pointed directly at a satellite to work.

**Gateways**
Gateway facilities enable voice and data transfers to take place between Globalstar's wireless satellite network and the traditional public-switched telephone network (PSTN). Globalstar uses many strategically located gateways around the world to efficiently handle these transfers, thus optimizing voice and data quality. Network system upgrades can be made quickly and easily at these regional gateway facilities, thus enabling Globalstar to rapidly deploy service enhancements to customers.

**Call Flows**
Globalstar's call flow was designed to meet one objective - deliver superb voice quality. To achieve that result, outbound calls from Globalstar's phones are directly connected to a minimum of one and up to three LEO satellites at one time, and then delivered to the closest regional gateway for call completion through the PSTN. Incoming calls follow the same course, but in reverse. By comparison, some LEO satellite service providers transfer calls between satellites until they are within range of their single gateway. This call flow can result in a high degree of voice degradation depending on the number of satellite hand-offs needed to reach this one gateway.

**Path Diversity™ & Coverage**

Globalstar uses a patented method of signal reception, called Path Diversity™, to connect a single call with up to three satellites at one time, to significantly reduce voice delay and enhance voice quality. Path Diversity™ permits a digital receiver to combine multiple, relevant signals of varying strengths into a single, static-free signal. As satellites move in and out of view, they are seamlessly added to and removed from a call in progress, thereby reducing the risk of call interruption. This enables Globalstar to provide broad coverage with less potential for signal blockage from buildings, terrain or other natural features.

Multiple LEO satellites working in concert guarantee that if a single satellite temporarily fails, another one can quickly respond and overall coverage will not be significantly impacted. By comparison, a single GEO satellite provides broad coverage, resulting in wide-spread service disruptions if it goes off-line, even temporarily. Globalstar's service covers latitudes from 70° north to 70° south, which is more than 75% of the world's surface area. The network was designed to service the temperate zones of the world where the majority of Globalstar's customers need coverage; however, coverage also extends across much of the earth's torrid zones, closer to the equator. A dedicated staff regularly monitors Globalstar's network to ensure that network operations are optimal at all times.

**Wireless Technology**

Globalstar utilises a version of Code Division Multiple Access (CDMA) technology based upon the IS-95 CDMA standard. CDMA technology forms the foundation for 3G (Third Generation) wireless services, which are in use by over 128 million people around the world. This digital transmission technology allows a large number of wireless customers to simultaneously access a single radio frequency channel. The result is less interference, and a many-fold increase in capacity when compared to analogue systems such as Frequency Division Multiple Access (FDMA). Globalstar's state-of-the-art technology is proven, and has been designed to take customers well into the future of wireless communications.

All of these elements combine to give Globalstar a distinct advantage over other satellite providers. Customers require high quality voice and data services, coverage and reliability. Globalstar delivers on all points. For additional information contact an authorised Globalstar Dealer.

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