**Role of Satellite Communications in Enabling IOT Connectivity**

The Internet of things (IoT), as the name implies, depends to a great deal on Internet connectivity. However, another technology that has played a pivotal role to develop the global economy is satellite communication. Though many consumer-based devices depend on terrestrial mobile connectivity, large scale business applications require far more reliability and outreach which is provided by satellite technology. Considering the large volumes of data that will be received and transmitted for IoT based applications in coming future, it’s not possible for one single technology to reach all users and potential markets and deal with enormous connectivity requirements. Given the incorporated resilience and omnipresence of satellite communications along with their availability and security, the technology can play an important role in the support of IoT sector development and bringing the full potential of IoT interconnected devices to use. Satellite operators are not investing more in developing hardware and services that enable IoT connectivity. Operators are also ensuring the easy integration of satellite solutions into complementary and hybrid networks to cater to IoT sector and customer services.

**Why Satellite Connectivity?**

But the question is, with cellular coverage now having a universal presence, why satellite is important? Let us look at some benefits and services coming from satellite technology, which are vital for Internet of Things to survive.

1. **Coverage**

For businesses, IoT and related technology is one of the ways to extend it to different geographical locations. This is why, satellite coverage is a value proposition for such businesses. They can monitor assets and communicate with remote sites with the help of this technology, which is not possible without satellite communication.

It may seem to an average observer that mobile networks are enough to cover this need, however, it is not possible in all parts of the world where network coverage is either patchy or non-existent. In such geographical locations, satellites may be the only way to provide coverage and enable tracking of assets.

1. **Reliable Connectivity**

Satellite connectivity is reliable up to 99.9%, providing it a greater edge than cellular services, which cannot guarantee the same level of reliability. This holds especially true for geographies outside urban areas. Even in urban areas, cellular coverage is good, but under certain conditions, it may become ineffective, as opposed to seamless satellite service. These conditions could be infrastructure location, environmental conditions or geographical congestion.

For instance, imagine a time when a remote manager monitors a train’s location, cabin temperature and speed with the help of sensors. Think of a cargo ship or vehicle which has sensors to allow its dispatcher to locate and monitor them throughout the commute. Thanks to the Internet of Things, this is no longer a future thought, but a present possibility. But this kind of mobility is not possible unless you have the ability to reach them irrespective of their location and distance from the operational base. With mobile networks breaking down in remote areas, satellite connectivity is the only reliable way to track the vehicles and ensure that they are functioning in the required manner.

1. **Longer Life Cycle**

A satellite’s life cycle is quite long with its technology lasting for as many as more than 20 years with backwards compatibility. Comparing this to cellular networks, where technology keeps evolving every few years, from 2G to 3G and 4G, and now 5G in the trial process.

1. **Faster Deployment**

Satellite communication does not require local infrastructure. Other means of communication in remote areas need time and expenses for new infrastructure. But with satellites, providing a terminal can ease the deployment to a great extent. Satellite IoT also works at a global level, which means that you do not need various product variants to cater to your geographical demand. Also, with high speed satellite internet connectivity such as [HughesNet](http://www.planetdish.com), you can get a faster connection.

1. **Multicasting**

Satellite IoT providers can broadcast a message as one billable event to a group of subscribers, thus reaching multiple units with its large transmission area and enormously cutting down cost for these transmissions.

**IoT Applications for Satellite Connectivity**

Let us see the industries where Satellite connectivity can particularly help with the benefits it offers for IoT applications.

**Transportation**

Transport infrastructure is now evolving. Consider efficient fleet management thorough connectivity for instance. Also, in public transport systems, predictive and tracking mechanisms are being used. Smart inventory for shipping and geofencing in military assets is also now possible because of IoT. With satellite technology, transport services enabled by IoT make the system more efficient and accurate. Especially for management of large fleet, a stable connection is what is required to ensure the accountability of all movements.

**Retail and Mobile Banking**

To expand retail industry beyond conventional borders, a sustainable and reliable connection is important for maintaining the operations and security of point of sale terminals.

Satellite connectivity can also help provide banking facilities to those who don’t have traditional access to mobile banking, especially in rural areas.

**Smart Cities**

Satellite enabled IoT can be deployed through a smart grid for better management of energy and resource allocation. This cannot convert the idea of smart cities from a possibility to a probability. It also helps with security by providing uninterrupted coverage to keep the infrastructure online by integrating with terrestrial-based systems.

**Management of Remote Assets**

One of the most useful applications of satellite technology for IoT is the easy exploration, monitoring and management of remote assets using sensor networks. This is ideally applicable to the energy, oil and gas and mining industry, which can deploy sensors and operate remotely in geographically difficult locations.

**Consumers**

In addition to broader industry applications, satellite technology also opens opportunities for consumer-based IoT applications. For instance, wearable devices that can provide a range of services to users, from secure purchases to check-ins to fitness calculators. With increased demand from consumers for seamless experience and lesser glitches, satellites offer the right kind of coverage with low latency and high speed.

**The Future of Satellite Connectivity for IoT**

To utilize IoT capabilities to their full potential, it is important for satellite services to be easily accessible. With better coverage, longevity and reliability, satellite for IoT has a promising future with industries and consumers reaping the benefits.

Though satellite technology is promising for the emerging market, it hasn’t been quite mastered yet. But as the race to integrate IoT with satellite continues, we are likely to see a global satellite coverage taking place sooner than later.