

Revolutionizing DSNG Operations with Starlink and OneWeb



Introduction

Geostationary satellite connectivity has been a cornerstone of the broadcast industry for decades, offering reliable remote connectivity for news and event broadcasts. However, the high cost of satellite truck operations and ad-hoc satellite access has led the industry to desire more cost-effective solutions. Vislink and BT Media and Broadcast wanted to come together to investigate and push the boundaries of how Low Earth Orbit (LEO) satellite constellations, such as OneWeb and Starlink could be deployed to change the landscape of DSNG (Digital Satellite News Gathering) operations and deliver the potential to revolutionize the way broadcasters approach connectivity.

The Promise of LEO Satellite Constellations

OneWeb and Starlink: A Game Changer for Universal Satellite Access

Starlink, with its exuberant CEO Elon Musk, has garnered significant attention in the satellite community. Likewise, OneWeb is rapidly advancing to offer global levels of satellite coverage. Both systems offer low-cost connectivity subscriptions, and easy-to-transport terminals, making them potentially attractive solutions for broadcasters. Early adopters have praised both systems' ability to provide high data-rates and bi-directional IP connectivity for instant access.

Whilst Starlink initially launched with a more consumer application focus and OneWeb having looked towards business applications – providing some service guarantees, both systems are now extending their user-base. The possibilities for broadcast applications look attractive with both systems.



A StarLink antenna



A OneWeb Kymeta antenna

However, with Starlink and OneWeb constellations not yet reaching completion, the possibility exists for some momentary outages for both systems.

Can LEO Satellite Technology be an alternative offering to Geostationary Solutions?

As interest in LEO constellations grows in the broadcast community, questions arise about whether LEO technology can provide a reliable and complementary solution to traditional geostationary ad-hoc services. Can LEO satellite systems fill a gap where classical DSNG up-link trucks are not the optimal choice?

Combining LEO Satellite Systems for Enhanced Reliability

The Pioneering Effort

Vislink, a pioneer in supplying technology solutions to access both LEO satellite constellations and cellular services for news and events broadcasting, and BT Media and Broadcast – the leading global connectivity service provider sought to investigate the potential of merging the benefits of multiple LEO satellite systems.

Drawing on Vislink’s MVP TerraLink product, which includes video encoding suitable for truck-based systems, including technology for bonding multiple IP connections, with BT’s access to global satellite service offerings, the two organizations embarked on a technology trial.



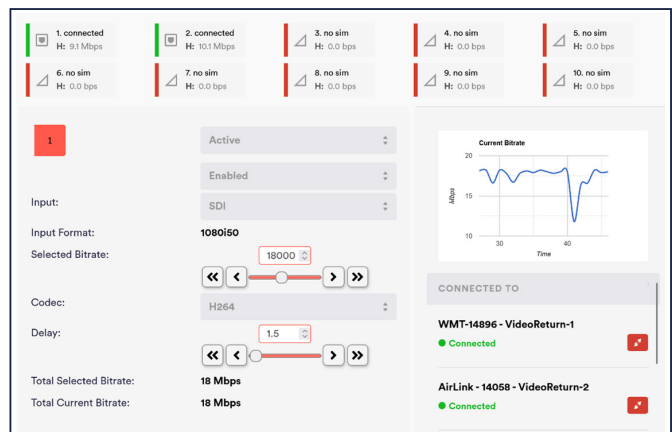
Vislink MVP TerraLink Encoder

Testing and Results

The trial began with tests on both OneWeb and Starlink individually and then in combination.

The tests examined packet loss statistics and measured maximum available up-link data rates. It became evident that short service breaks occurred on individual satellite networks, resulting in occasional picture break-up. However, by bonding both satellite services together, the benefits of a dual network emerged:

- The available up-link data rate significantly increased, averaging over 18 Mbps at the test location, more than sufficient for most broadcast services that utilized HEVC encoding.
- Although brief outages were observed in individual LEO satellite connections, the combination of both networks ensured no total network outage.
- By spreading data across both networks and employing adaptive bitrate encoding, the video connection remained reliable even during momentary individual network outages, ensuring seamless decoded video presentation.



Transmission statistics of Starlink and OneWeb Combined

Conclusion of the Trial

Monitoring the decoded video and network statistics demonstrated that a robust, high bit-rate transmission is achievable and practical by combining the connectivity services provided by Starlink and OneWeb Systems. The end-to-end latencies and bit-rate connections meet the requirements of many broadcasts where traditional satellite trucks are often deployed.



Monitoring the Received Video with a Vislink MVP Payout Decoder

Revolutionizing the Satellite Service Business Model

Occasional use of satellite time can be expensive, justified by the 99.999% availability that satellite links offer. However, NewSpace technology, represented by LEO satellite constellations, introduces the potential for similar service provisions at significantly lower costs.

- Ad-hoc satellite booking charges in the low hundreds of €/£/\$ per hour, coupled with LEO service subscription fees in the low hundreds of €/£/\$ per month, can yield substantial cost savings.
- These savings can offset capital equipment investments in just a few months, enabling truck operators to enhance profitability or provide new connectivity services for previously financially unviable video content.
- LEO satellite terminals have a smaller footprint than many geostationary terminals, allowing the addition of new LEO terminals to existing satellite trucks while maintaining their GEO antennas, minimizing the practical challenges of system migration.

The outcome of Vislink's and BT's trial shows that LEO satellite constellations are poised to revolutionize the DSNG industry, offering cost-effective, reliable, highly portable, and versatile connectivity solutions that meet the demands of modern broadcasting. With LEO satellite technology now maturing, broadcasters are presented with new opportunities to enhance their operations and expand their reach.

With an understanding of the plans for continued expansion of LEO satellite constellations, significant further performance improvements are expected over the coming months delivering greater global reach and higher capacities – This trial proves that solutions can be deployed now and will continue to enhance as 2nd generation constellations, with in-space satellite-to-satellite connectivity come on stream. There is plenty to look forward to .

View a video of the Vislink StarLink/OneWeb trial [at this link](#).

Additional information about Vislink products can be found at www.vislink.com.