Value leakage is your biggest problem

Value leakage is a growing problem in the satellite sector as technologies come on in leaps and bounds, but smaller sites continue on with legacy equipment. Upgrading equipment is often seen as a hefty expense to be put off for as long as possible while the status quo works the same as it always has, however, upgrades needn't always be as pricey and complex as imagined.

David Burr, Vice President, Business Development for Comtech EF Data

What exactly is value leakage, you're probably asking. It's the latest buzzword for leaving money on the table. The value is there but you're not able to fully capture it for some reason.

Budgets are tight these days, and a step that many businesses are taking is to reduce CapEx spend on things like network refresh projects. While this may seem logical, many older networks are leaking value and as a result, companies are leaving money on the table because modem technology has come a long way in the last few years. Today's satellite modems are much more efficient than previous generations featuring:

- More efficient coding such as DVB-S2X, which squeezes more bits into the same bandwidth;
- Higher order modulation as high as 256 APSK that can take full advantage of higher power, more sensitive HTS and Ka-band satellites; and
- Higher processing power, which supports better WAN optimization of networking protocols to avoid transmitting unnecessary bits.

Here is the typical scenario that we see: The network is a few years old and uses an aging strictly TDMA VSAT system that is still working but has limited MODCOD support and maybe an outdated coding scheme like Turbo. In the time since the network was originally deployed the satellite operator has replaced the satellite with a more powerful one, possibly an HTS satellite. The new satellite is providing a much better C/N than the previous satellite, but the legacy TDMA VSAT can't take advantage of the better C/N because of the limited MODCOD support. The customer doesn't really notice because everything is still working as it always did. There are fewer rain outages, which seems like a good thing until the user realizes that's because so much margin is being wasted under clear skies. Value is leaking and you are not realizing the profits that you should.

Getting value leakage under control

Even though there is value to be recovered, cash flow is still tight, so it's not easy to fund a technology refresh. So, how do you realize the longer-term value of efficiency while balancing short term cash flow constraints? Start with the highest capacity sites. While it may not be strictly an 80/20 situation, most networks have a few high-capacity sites that
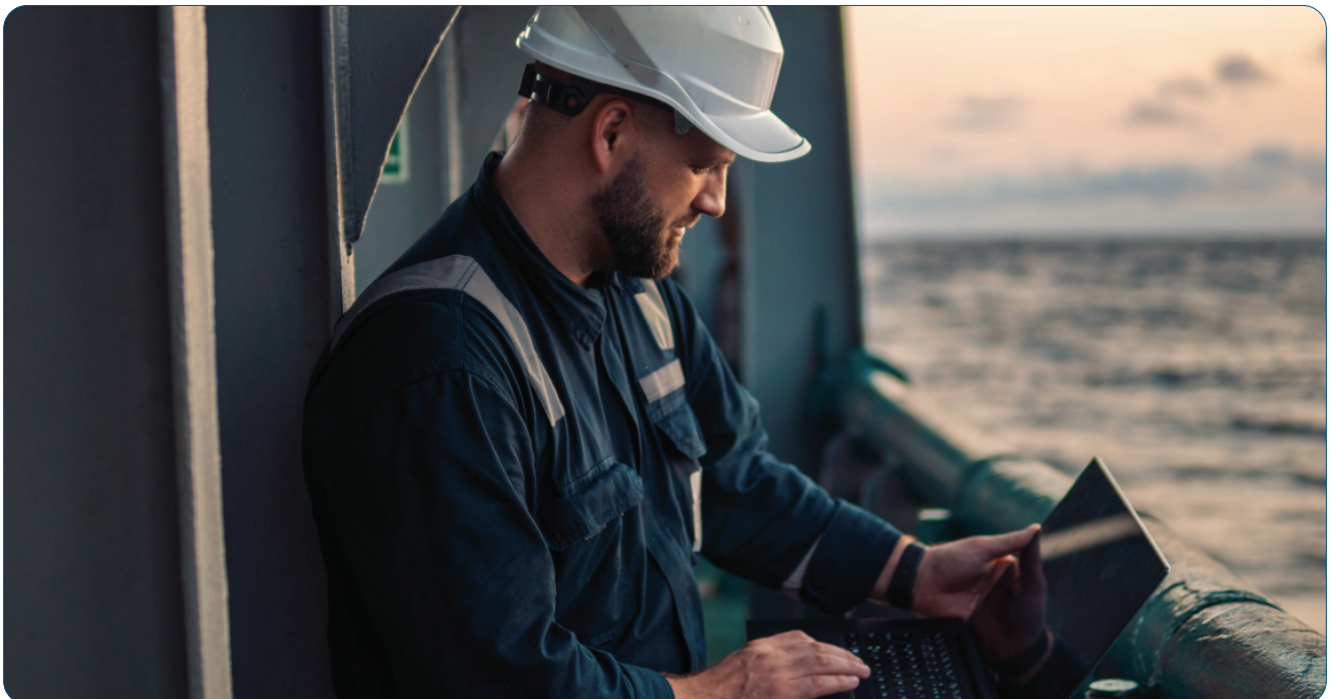
Crew connectivity is on the rise. Photo courtesy Istockphoto

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use much more bandwidth than the rest. High-capacity sites are also usually less bursty and benefit less from TDMA oversubscription. You can move these larger sites off the TDMA platform and onto dedicated SCPC links with better efficiency. This allows you to either reduce the MHz – and the associated costs – or add more (billable) Mbps, both of which improve profitability and cash flow. You can then use the additional cash flow to fund the next level of sites.

Brazilian use case

One of Comtech EF Data's customers is a key service provider to the energy sector in Brazil and had to develop a plan for upgrading their network to support the increased crew Internet requirements based on the updated Brazilian regulation NR 37. They considered the two choices; adding more bandwidth to their existing TDMA platform; or transitioning to Comtech EF Data's more efficient SCPC technology.

The service provider conducted side-by-side tests over the air to compare the spectral efficiency – a measure of

how much data is carried in a fixed amount of satellite bandwidth – of their existing TDMA platform and Comtech EF Data's high-performance SCPC modems. Their testing demonstrated that they were able to more than quadruple the link efficiency from 1.75 bits/Hz to 7.7 bits/Hz without having to change out any of the stabilized antennas or amplifiers offshore while at the same time significantly improving the link availability. Over a 1.5m stabilized antenna, an impressive throughput of 25Mbps duplex was achieved over Ku-band with a link availability of 99.7 percent a year even considering the regions notoriously challenging tropical storms.

In the Brazilian case, Comtech's SCPC approach was able to provide 4.4 times the throughput per MHz compared to TDMA. SCPC will provide the more efficient solution for sites and/or networks where the traffic oversubscription is less than 4.4x. The network operator can easily examine the performance of the existing network and identify sites with lower oversubscription rates, which are the best candidates for moving to SCPC. In the case of the Brazil network, all of the sites met this criterion, and the entire network was migrated to SCPC.

The H-Plus Heights Remote Gateway – The best of both worlds

The Brazil case showed the benefits of upgrading TDMA VSATs to Comtech EF Data's high-performance SCPC technologies. Comtech's dual mode H-Plus Remote Gateway offers service providers tremendous flexibility. In point-to-point mode, the H-Plus offers the same functionality as the CDM-625A modem including high performance coding and Doubletalk® Carrier-in-Carrier® technologies and is even interoperable with the CDM-625A. In addition, in Heights mode, the H-Plus can function as a remote modem as part of a point-to-multipoint Heights VSAT network, bringing the advantages of a shared bandwidth on demand networking using Comtech's industry-leading Heights Dynamic Network Access (H-DNA) waveform.

Using the H-Plus Remote Gateway, service providers are able to fully optimize the network by configuring sites to either high-efficiency point-to-point links using DoubeTalk Carrier-in-Carrier for high traffic sites or configuring the site as part of a managed Heights network allowing capacity to be efficiency shared by multiple sites with bursty traffic. As the network evolves, sites can be reconfigured from Heights to point-to-point mode and vice-versa, ensuring that expensive
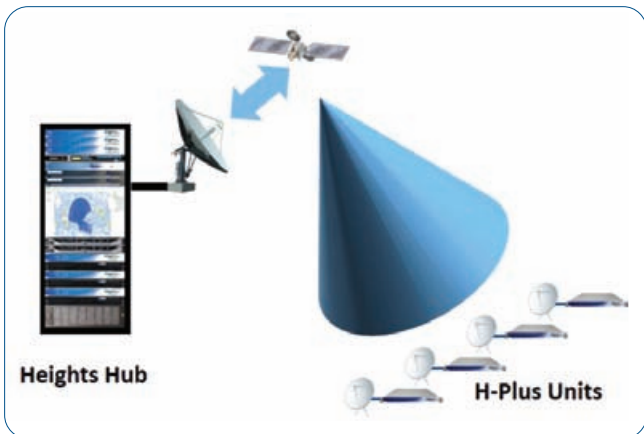
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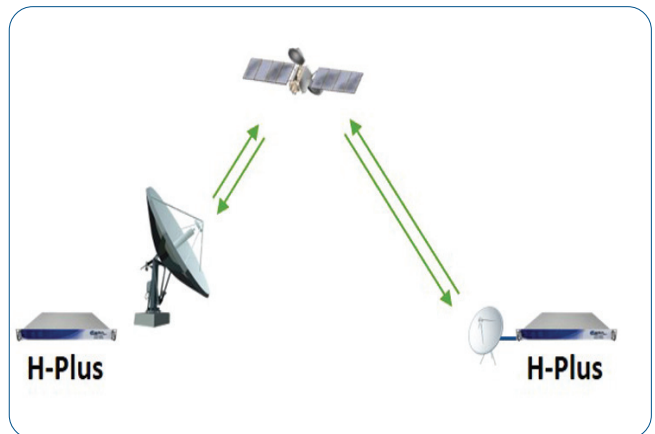
Point-to-Point SCPC mode

Value leakage. Photo courtesy Istockphoto

satellite resources are fully optimized. The H-Plus provides service providers with the best of both worlds, providing the most efficient use of satellite resources while minimizing the number of modem types that need to be supported.

Many service providers look at SCPC as being 'old school,' but the superior efficiency still has a role to play, especially with today's COVID reality. Budgets may be tight, but cutting CapEx isn't necessarily the best strategy to optimize cash flow. The strategic deployment of more efficient technologies such as Comtech EF Data's advanced satellite modems with high performance, low latency VersaFEC®-2 encoding and

Doubletalk Carrier-in-Carrier technology can reduce bandwidth costs and improve network profitability. A phased approach which prioritizes the largest sites can form the core of a strategy which minimizes value leakage and provides substantial financial benefits for service providers who are often forced to choose between the efficiency of SCPC and flexibility of a managed network. In this environment the H-Plus dual mode support enables service providers to offer the best of both worlds, reducing OpEx in the near term while building the foundation to transition to a fully managed network. ◼