

EXPAND NETWORKS CHOSEN BY SCRIPPS INSTITUTION OF OCEANOGRAPHY TO ACCELERATE SCIENCE FROM THE SEA BED



IN SUMMARY

- Substantially faster data transfer speeds over the same satellite links
- Significant improvement in communications quality providing a better and more productive user experience.
- Return of investment within 9 months
- Savings of over \$600 per month per ship
- Tremendous ease of 'plug and play' deployment and depth of remote management control, enabling onboard scientific crew to enjoy all of the benefits of the Expand Accelerator with minor (if any) intervention required.

APPLICATIONS

- Email
- VoIP
- Video conferencing
- Real-time educational tools

PROFILE

Scripps Institution of Oceanography at University of California, San Diego, is one of the oldest, largest and most important centers for global science research and education in the world.

Now in its second century of discovery, the scientific scope of the institution has grown to include biological, physical, chemical, geological, geophysical and atmospheric studies of the earth as a system. The institution has a staff of about 1,300 and annual expenditures of approximately \$155 million from federal, state and private sources.

CHALLENGE

Scripps Institution of Oceanography operates four oceanographic research ships, one research platform for worldwide exploration, and forms part of the HiSeasNet satellite network, a dedicated network providing connectivity, basic communications services and real-time education applications for oceanographic research across the University-National Oceanographic Laboratory System fleet.

Each ship is equipped with satellite communications systems, which are essential in order for shore-based staff to provide support to on-board scientific colleagues. However, satellite bandwidth covering the world's oceans is not only limited in terms of data capacity, it is also extremely expensive.

“ With the savings in bandwidth our Expand Accelerators are paying for themselves within nine to 18 months... and will continue their benefits far beyond that.

- Steve Foley, Network Engineer, Institute of Geophysics and Planetary Physics at Scripps Institution of Oceanography, UC San Diego

Steve Foley is a network engineer at the Institute of Geophysics and Planetary Physics at Scripps: “Our research vessels need to squeeze every bit of bandwidth out of those fixed satellite links. The more data we can send home, the better. The more satellite images, phone calls, support, etc. that the scientists on the ship can get from shore, the better they can do their science.”

Foley had initially been skeptical about the implementation of bandwidth acceleration, on the basis of his investigation of a Mentat (now Packeteer) solution which had been

proposed for the shipboard systems early on. “Satellite communications are notoriously problematic for bandwidth acceleration, and we’d resigned ourselves to sufficing with what we had. It was a case of ‘if only network accelerators weren’t so ineffective over satellite links.’ Then we found Expand.”

SOLUTION

Foley looked to re-address the bandwidth issue by evaluating Expand Accelerators. “We looked at Expand, and also at Riverbed,” recalled Foley. “By the time the project was far enough along to actually start demoing hardware, we lined up our needs and found that Expand was the only one that had the features geared towards making our low-bandwidth satellites useful. Our issues aren’t about running CIFS across our high delay links, but we really care about things like UDP acceleration, SCPS, and auto fragmentation.”

With the unique ability to bolster performance of satellite links, even in the most extreme and remote environments, Expand has been optimizing a broad range of afloat environments across the world’s largest shipping, naval and maritime organizations since 2001. Foley continues, “We were really impressed when Expand didn’t look at us funny when we said we wanted to put their gear on ships! To them it was the norm, having had many years of experience accelerating maritime environments like ours.”

Expand’s WAN optimization technology, with integrated Space Communication Protocol Standard (SCPS) and TCP acceleration, mitigates the effect of low bandwidth and high latency obstacles that traditionally impede the speed and performance of applications over satellite links. Combining SCPS with compression, byte-level caching and layer 7 QoS, Expand’s technology enables available bandwidth and real-time interactive TCP traffic to be maximized, extending Scripps’ existing network infrastructure investments and providing ‘virtual bandwidth’ capacity to users.

Initial roll-out was accomplished smoothly on the two initial platforms, Scripps’ research vessel Roger Revelle and the Woods Hole Oceanographic Institution’s research vessel. Since then, additional devices have proved themselves to be truly ‘plug and play’. “Non-IT folks have been receiving Accelerators straight from Expand, popping them in the ship’s equipment racks, setting IP addresses, then walking away while we do the rest remotely. The amount of management control we have from shore is very impressive.”

BENEFITS

Scripps is now able to pass substantially more data across its fixed bandwidth satellite links, which in some cases cannot exceed 64Kbps. This in turn requires Scripps to spend less money on satellite space segment leases than they otherwise would. “Bandwidth is costly,” stated Foley. “With the savings in bandwidth our Expand Accelerators are paying for themselves within nine to 18 months, depending on the type of satellite service used, and will continue their benefits far beyond that. We estimate we are saving over \$600 per month for each of our large global ships.”

In terms of other advantages, Foley believes the Expand Accelerators have brought about an unexpected one: peace and quiet. “So far, I haven’t gotten much feedback from the ships. No news is good news, I think. However, I’m sure I’ll hear something once they figure out just how fast their bandwidth links are now.”

“If we bring more ships into the network, we will continue to consider accelerators as part of the standard equipment set. Beyond that, we are always looking at other projects that may benefit from the technology.”