XipLink™

TechnologyInformationBrief

Interoperability and Flexibility

Flexible Wireless Optimization Technology

XipLink products offer software-based optimizations for use over satellite and wireless networks and deliver the maximum capacity possible across communication links with:

- High latency
- A high bit error rate
- A high degree of asymmetry

This benefit applies to satellite, space segments and terrestrial wireless environments and is effective over any IP network topology.

The XipLink solution is scalable, customizable and standards oriented. Wireless Optimization is transparent to end-users *and* transparent inside the network – source and destination IP addresses and ports remain unchanged.

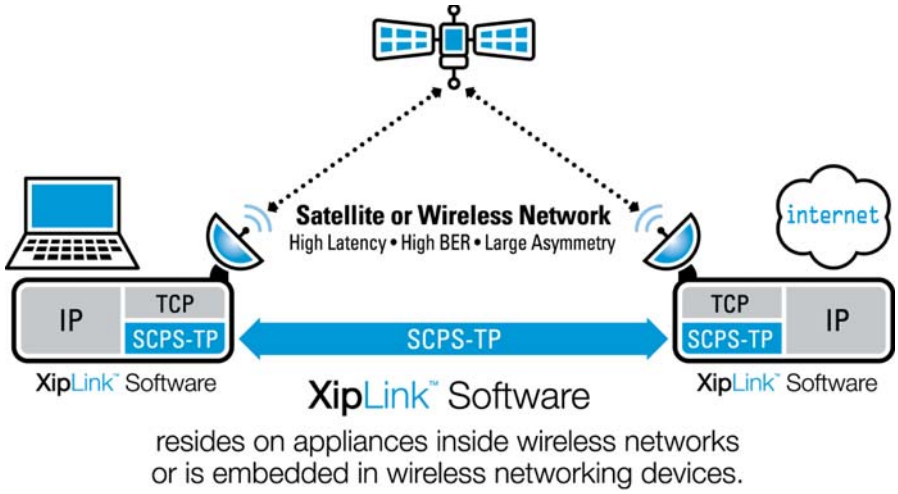
In addition to its foundation developing the Space Communications Protocol Specification – Transport Protocol (SCPS-TP), XipLink wireless optimization software is integrated with:

- Transport layer TCP Acceleration
- HTTP Acceleration
- High Ratio Data Compression
- Web caching

XipLink Software is highly tunable and enables the user to always make the best efficient use of the available bandwidth in stressed communication environments.

XipLink was the first independent commercial implementation of the SCPS-TP standard. It has been tested numerous times to be fully interoperable with other SCPS-TP implementations.

The XipLink Optimization System (XipOS) is also compliant with the Interoperable Performance Enhancing Proxy (I-PEP) standard.



XipLink Optimizer appliances interoperate with any embedded XipLink software and should be installed where they can most closely bracket the wireless link. XipLink's embedded systems software lends itself to integration on many small mobile communications devices delivering immediate access to space based protocols specifically designed to accelerate wireless IP network performance.

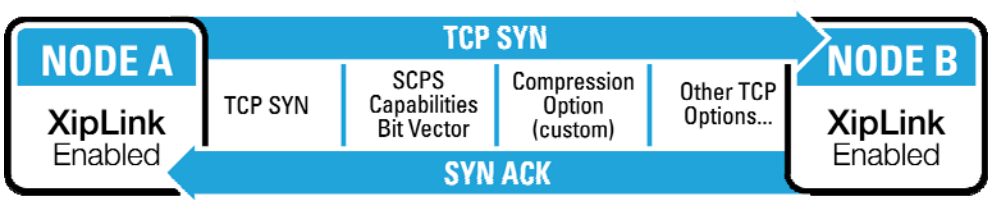
XipLink remains committed to standards compliance wherever possible, but in the interests of optimized performance, XipLink also uses proprietary extensions. These extensions are dynamically negotiated at the TCP level and are transparently available to any TCP traffic that is crossing the links without end user configuration.

In addition to standards based SCPS-TP negotiation, other enhancements such as selective negative acknowledgments and XipLink's data compression are transparently negotiated during each TCP connection setup and enable the XipLink system to operate in:

- TDMA satellite networks
- Point to Point and Point to Multi-point networks
- Hub and Spoke networks
- Meshed networks
- Networks that may be only partially installed

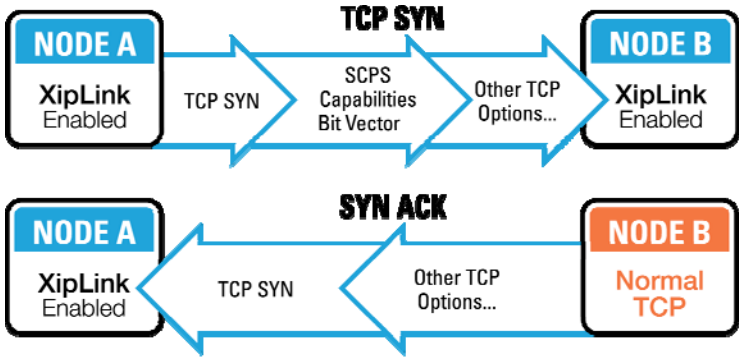
TCP Option Negotiation for Topology Flexibility

Each time a new TCP connection is initiated and passes through a XipLink Optimizer, the XipLink software splits the TCP connection, and additional TCP options are requested across the wireless link. When these options are recognized by a second instance of the XipLink software (usually at a hub site), the user benefits from each configured function as diagrammed below.



Result: SCPS-TP, Compression Other TCP options successfully negotiated

In some cases, a user connection request may not encounter a hub optimizer or other XipOS technology. When this happens, the user's session simply uses traditional TCP, and no optimization techniques are negotiated. If it encounters another SCPS-TP implementation, it will negotiate SCPS and benefit from TCP acceleration but not other enhanced capabilities. The disciplined use of TCP options in the XipLink system ensures interoperability across all IP network topologies.



Result: TCP and Other TCP options successfully negotiated. Limited benefit.