

Technology Information Brief

Network Topology Flexibility

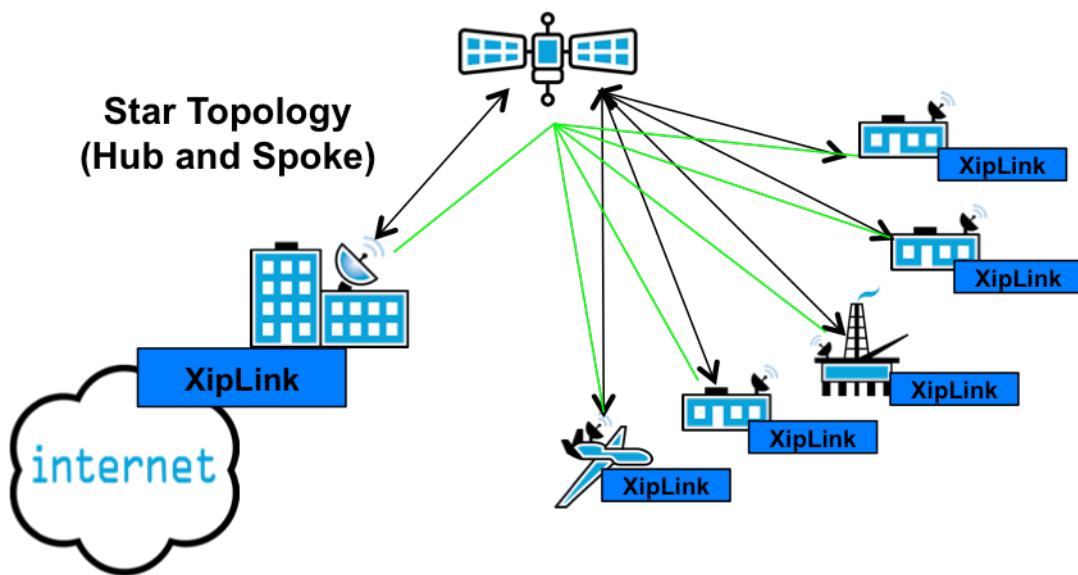
Wireless optimization for users on any network at any time

XipLink wireless optimization software is based on the Space Communication Transport Specification (SCPS-TP) and will optimize communications between users over any wireless IP network topology (Star, Mesh). Protocol optimization and data compression algorithms are designed to optimize the available bandwidth of any satellite or terrestrial wireless link while being transparent to both the end-user as well as other networking elements in the IP network.

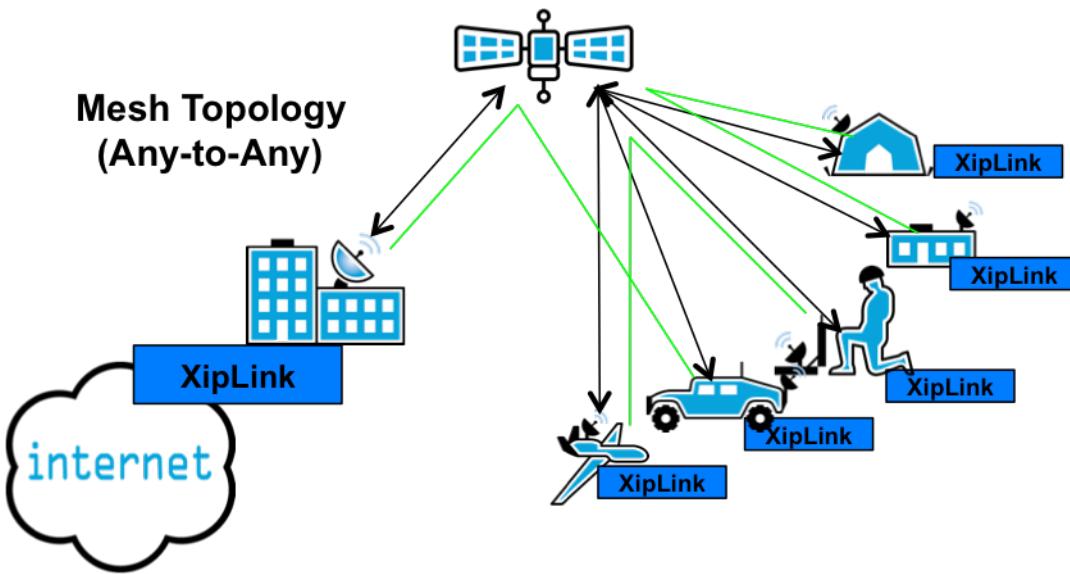
One of the biggest benefits of the XipLink optimization software is its flexibility when operating over different IP network topologies. The SCPS-TP standard was developed by the space agencies to ensure a minimum level of interoperability through a program called “Interoperable Performance Enhancing Proxies” (IPEP). Some WAN optimizers are attempting to retro-fit SCPS-TP functionality into traditional WAN optimizers, but few are built upon this foundation in early wireless optimization for space links.

Building upon these early space standards XipLink has carefully added other wireless optimization features like data compression and HTTP pre-fetch, but in very efficient kernel code due to our partners embedding these software modules in many smaller devices that may have limited CPU and memory.

Transparent optimization over any IP Network Topology



In a Star Network topology, where remote locations are generally connecting back to a larger facility, the larger XA-4000, XA-10K, or XA-30K appliances are typically installed at the central site to support the higher bandwidth and the large number of combined TCP sessions that may be open at any time.



Using XipLinks wireless optimization, remote users connected through smaller XA appliances at branch offices or through XipLink software embedded on a remote communications controller (e.g. inside an aircraft, ship, or portable terminal) transparently benefit from wireless optimization as they open and close TCP connections to sites over the wireless link.

Users on any two networks must only be reachable via Layer 3 IP routing for wireless optimization to occur. In a Mesh network the wireless optimizers will be sized differently at each site based on the aggregate bandwidth and the aggregate number of TCP session between users on the LAN and any number of remote networks, not just the number of users communicating to a central site. In all topologies wireless optimization is transparent to the users and if no remote optimization software is detected, traditional TCP is used automatically.

Maximum capacity and maximum flexibility

Using industry standard protocol enhancements, XipLink has been able to maintain some of the most important objectives originally envisioned by the pioneers of SCPS-TP:

- Continued interoperability between vendors based on SCPS-TP standards
- Transparent optimization, simultaneously between users on any IP network at any time
- Capabilities dynamically detected using “TCP options” - no pre-configuration.
- Flexibility to extend optimization functions while maintaining ease of use.

Wireless optimization is available over any IP network topology and supports multiple underlying communications protocols, like TDMA, SCPC, DVB-RCS for satellite communications but also includes star or mesh topologies using licensed or unlicensed terrestrial wireless protocols like WiMax. The benefits of wireless optimization apply to any link with variable bandwidth and high BER; links that experience high delay and links that are asymmetric.

In many large commercial or military installations, it is not uncommon for a large headquarters site to access satellite networks using multiple communication protocols. If the wireless optimization appliance is placed upstream of these multiple aggregated connections, in-line with the IP data flow, users from any network using different underlying protocols can all be optimized through the single large upstream appliance. No special configuration is required, but the appliance must be sized appropriately for this combined load.