

# Technology Information Brief

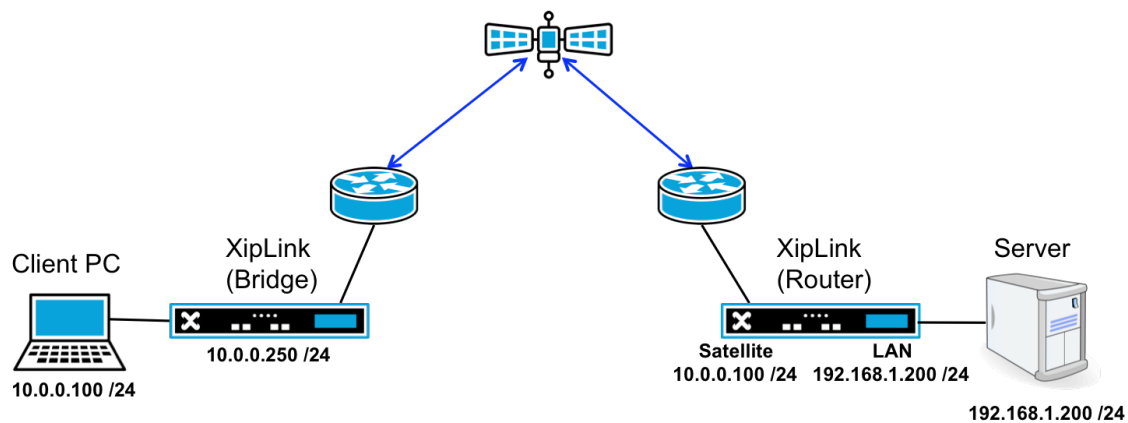
## Wireless Optimizer Installation Flexibility

### *Layer 2 Bridge or full function Layer 3 IP Router Configuration Options*

XipLink wireless optimization software is based on the Space Communication Transport Specification (SCPS-TP). Using protocol enhancements and data compression algorithms specifically designed for wireless networks, XipLink products will deliver full access to the available bandwidth of any satellite or terrestrial wireless link while being transparent to the end-user as well as other networking elements in the IP network.

XipLink software is delivered on the XA-Series of appliances as well as the XE-Series of software and single board computers specifically designed to be embedded in other devices running BSD, Linux or Windows operating systems. These devices include military communication controllers, data encryption devices, aviation or maritime VSAT terminals, wireless radios and premise equipment.

Whether the XipLink software is installed as an appliance in a wireless network or as software embedded in a third party mobile device the wireless optimization function must reside in-line between the users and the wireless link. For maximum flexibility, the wireless optimizer appliance, or the logical software function that may be embedded in a third party system can be configured as a Layer 2 transparent Bridge or a Layer 3 IP Router. When operating as an IP router, the optimizer can utilize RIP, OSPF and BGP routing protocols, making installation in even complex IP networks very simple.



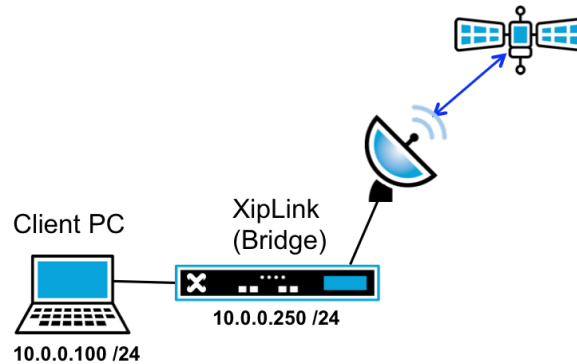
### *Installation as a Layer 2 Bridge*

One practical aspect of providing wireless optimization is that many remote sites have no access to trained IT or networking staff. Often these sites are tactical Military or Disaster Response environments, which make simple installation and configuration mandatory.

In most remote sites, the XipLink appliances are typically installed as a Bridge. Users simply install the device in-line between the LAN and the wireless modem and no changes to IP addresses or default gateway parameters are necessary.

## Fail-to-Wire

A key feature of the XipLink appliances that are typically deployed in these remote installations is termed “fail-to-wire”. This is a software feature that monitors the device when it is configured in Bridge mode. If the optimizer detects a loss of electrical power, or if the software self-detects a problem, the optimizer removes itself from the network path. This will result in standard, un-optimized TCP connections over the wireless or space segment and while users will notice an increase in delay and decrease in throughput, there is no loss of connectivity. In critical environment, a spare optimizer is stored locally and can be simply installed, even by untrained staff.



## Installation as a redundant Layer 3 IP Router

When installed at a hub or central site where many remote sites may rely on a single large XipLink XA-Series appliance for optimization, the optimizers are typically installed and configured as a Layer 3 IP Router and support RIP, OSPF and BGP routing protocols.

At larger sites, the wireless optimizer is generally installed at Layer 3 in a fully redundant configuration. Two configured optimizers use the Virtual Router Redundancy Protocol (VRRP) to maintain a primary and backup relationship. If the backup optimizer detects any anomaly in the primary optimizer it automatically takes over, eliminating any possibility of a system wide outage.

In practice, we find that remote sites or embedded software optimizers operate in Layer 2 Bridging while hub sites typically use Layer 3 Routing in a fully redundant configuration.

