

XipLink

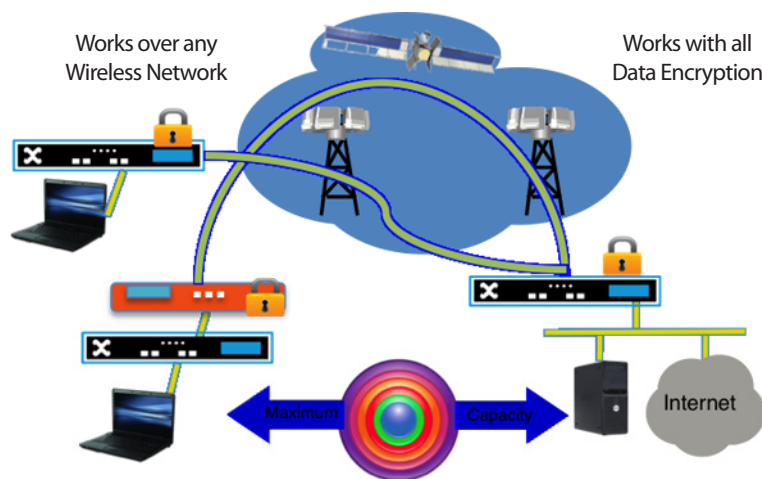
XA-Appliances Overview



XA-Appliances

Maximum Wireless Capacity Increased throughput and reduced cost

XA-Appliances deliver the most advanced satellite and wireless optimization in easy to install appliances, right-sized for the bandwidth and number of users at each location. For small and medium sized sites, set-top-box appliances are easily installed without the need for trained IT staff. For very high speed links or central aggregation sites, fully redundant appliances can optimize links up to 155 Mbps and support thousands of simultaneous sessions, typically increasing bandwidth from 2X to 10X for all TCP applications.



XipOS works between users of any two devices of any type. A central XA-Appliance can support remote users of devices with XE-Embedded XipOS, the XS-104 single board computer or users with a XipStick portable optimizer. Based on the SCPS specification, XipOS optimization simultaneously works with secure and un-secure users over any wireless network

VSAT - TDMA / SCPC / Mesh / MSS
 3G / 4G Cellular - Interconnect and Backhaul
 Terrestrial Point-to-Point and Point-to-Multipoint
 LTE / WiMax / WiFi - CPE to Base Station links

XipLink Optimization Software (XipOS)

SCPS-TP Protocol Acceleration

Fills the wireless link to capacity

- SCPS-TP based TCP acceleration
- Interoperable PEP (I-PEP) Compliant
- XipLink Transport Controls (XTC)
 - Fixed Rate Control Mode
 - Dynamic Rate Control Mode
 - Programmable Rate Control
 - Basic Rate Control Mode
- Integrated advanced traffic shaping up to 100 QoS classes
 - Configurable committed, maximum rates

Streaming Data Compression

Exceeds the wireless link bandwidth

- Delivers 2x to 10x in bandwidth gain
- Reduces the number of packets

Internet Optimizations

Makes web surfing fast

- HTTP Acceleration
- Dynamic Web Cache hardware option

Security - Optimize Encrypted Data

Install with any type of encryption

- Integrated IPSec VPN encryption option

Voice Optimization

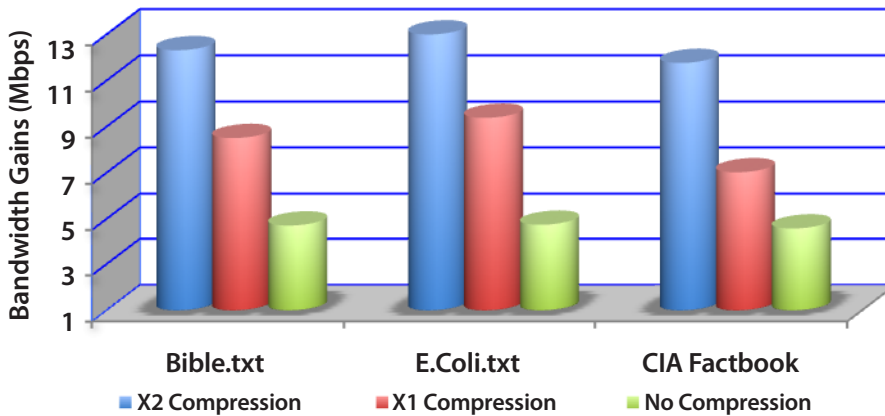
- ROHC Header Compression
- Packet Coalescing

XA-Appliances

XipLink Optimization Software (XipOS)

XipLink Optimization Software (XipOS) delivers maximum bandwidth across wireless communication links using extensions of the Space Communication Protocol Specification (SCPS).

Protocol acceleration, streaming data compression and Internet web browsing enhancements are combined in very efficient, easy-to-install appliances, single board computers and portable devices with options for integrated IPsec VPN and Dynamic Web Caching.



Remote user sessions are transparently split, or proxied, with new sessions opened across the link using protocol acceleration and streaming data compression to overcome common wireless issues:

Varying latency (delay) because of long links and users roaming

High bit error rates because of constantly changing RF link conditions

Link asymmetry because of smaller, lower power remote radios

XipOS offers multiple techniques to optimize web browsing, providing both capacity savings and faster browsing. All products incorporate basic HTTP Acceleration capabilities. The dynamic caching option will save a typical 20-30% of the bandwidth. XiPix image compression can save a further 50% of the bandwidth.

There are no topology limitations or tunnels in a system based on SCPS, establishing a foundation that allows a network operator to deploy an XA-appliance at the hub-side or logical center of any wireless network and immediately increase the bandwidth for those users that also utilize a SCPS based remote device, typically from 2X to 10X for all TCP applications. To maximize deployment flexibility, XipLink Lightweight Tunnels permit out-of-path deployment.

Easy to Deploy and Manage

- Completely transparent to users
- Layer 2 - Bridge installation (typical remote)
- Layer 3 IP Router installation (typical hub site)
 - RIP / OSPF / BGP routing protocols
 - Redundant appliances use CARP
- Centralized configuration option

Optimize any Wireless Network Topology

- VSAT - Star Topologies
- Mesh networks of any size
- Dedicated SCPC links
- Terrestrial Point to Point links
- Terrestrial Point to Multi-Point links

SCPS-TP Protocol Acceleration

- Fast-Start algorithms
- Acknowledgment Frequency Reduction
- Selective Negative Acknowledgements

Streaming (across packets) Data Compression

- Proprietary streaming data compression
 - X1 and X2 modes for efficiency
 - Dynamic Active Resource Management

Internet Optimizations

- HTTP Acceleration
- DNS Caching
- Dynamic Web Cache hardware option
- XiPix (XA-30K Product Only)

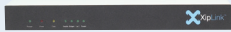




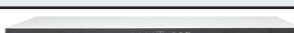
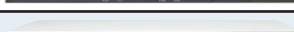

XipOS Transport Controls (XTC)

- Fixed Rate Control
- Dynamic Rate Control
- Programmable Rate Control
- Basic Rate Control

Flexible Deployment Options

- XA-Appliances
- XS-Specialty Products
 - XipStick Portable Optimizer
 - XS-104 Single Board Computer
- XE-Embedded XipOS
 - BSD, Linux, Windows devices

XA-Appliances for Maximum Bandwidth

Sessions	Bandwidth	Sessions	Typical Use	XipLink Products
XA-50	2 Mbps	50	Small Office / Vehicles	
XA-500	4 Mbps	500	Medium Office / Vehicles	
XA-500C	4 Mbps	500	Web Cache Hardware Option	
XA-2000	8 Mbps	2,000	Medium to Large Offices	
XA-4000	16 Mbps	4,000	Data Center Applications	
XA-4000C	16 Mbps	4,000	Web Cache Hardware Option	
XA-10K	45 Mbps	10,000	Large Office / Teleport	
XA-30K	155 Mbps	30,000	Very High Data Rates	
VPN-xxxx	All	Variable	IPSec Software Option	[product image]

XA-Appliances with XipLink Optimization Software

SCPS-TP Protocol Acceleration

- Kernel based using XipLink Dynamic Socket Buffers
- Transparent operation as SCPS-TP proxy gateway
- Satlabs I-PEP compliance for interoperability
- XipOS Transport Control modes for full bandwidth utilization on dedicated and dynamic links
- Selective acceleration

Quality of Service

- Hierarchical Class Based Queuing
- DSCP classification and re-marking
- UDP / VOIP or other data prioritization
- Integrated with XipOS Transport Control modes
- Committed and maximum rate options

Data Compression Algorithms

- Multiple, simultaneous algorithms (X1 and X2)
- Active Resource Manager for dynamic control

Internet Optimizations

- Dynamic Web Cache hardware option (disk)
- HTTP Acceleration
- TTCP Fast Start
- HTTP Compression and XiPix (XA-30K only)

XipLink Real-Time: Voice Header Compression

- ROHC Header Compression
- Packet Coalescing

Management

- Web based graphical user interface uses HTTPS
- Standard and Proprietary SNMP MIB's for monitoring
- NetConf based central configuration model
- Real time reporting and graphing on each appliance
- Remote upgrades
- Configuration Profiles

Network and Redundancy Capabilities

- Installs as Layer 2 Bridge or Layer 3 IP Router
- Dynamic routing protocols - BGP, RIP, OSPF
- Redundant appliances use CARP protocol - Hot Standby
- Remote devices can use simple on-board Fail-to-Wire
- IP Version 6 Routing
- Advanced Anti denial of service capabilities
- Lightweight Tunnels
- NAT
- DHCP Server and Client

Virtual Private Networking (VPN)

- XipOS optimization operates over any encrypted network
- Installed in-line to optimize the data before encryption
- IPSec VPN software option for any XA-Appliance
- Enables on-board 128 / 256 bit AES encryption

Hardware

- RS- 232 serial console serial or out-of-band management
- Flash drive resilience for reliability (image backup)

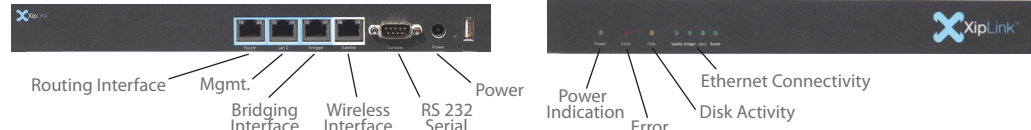
XA-Appliances

Hardware Specifications

Model XA-50, Model XA-500, and Model XA-500C

Set Top Box

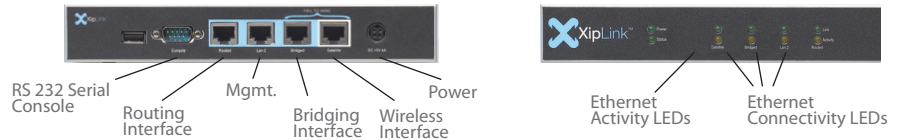
Height	Width	Depth	Weight	Temp. Range	Power	Certifications
30 mm	290 mm	170 mm	0.9 kg	0° to -60° C	14 W	CE / FCC
12 inches	11.4 inches	6.8 inches	2.0 lbs.	32° to 140° F	14 W	CE / FCC



Model XA-2000

Set Top Box

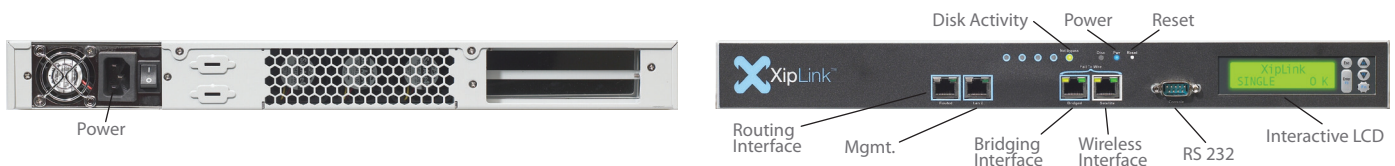
Height	Width	Depth	Weight	Temp. Range	Power	Certifications
35 mm	225 mm	155 mm	1.6 kg	0° to 50° C	60W	CE / FCC
1.4 inches	8.9 inches	6.1 inches	3.5 lbs.	32° to 140° F	60W	CE / FCC



Model XA-4000 and Model XA-10K

1U - Rack Mount

Height	Width	Depth	Weight	Temp. Range	Power	Certifications
44 mm	430 mm	393 mm	6.0 kg	5° to 45° C	350W	CE / FCC
1.7 inches	16.9 inches	15.5 inches	13.2 lbs.	41° to 113° F	350W	CE / FCC



Model XA-30K with Redundant Power Supplies

2U - Rack Mount

Height	Width	Depth	Weight	Temp. Range	Power	Certifications
88 mm	430 mm	500 mm	17.0 kg	0° to 40° C	500W	CE / FCC
3.5 inches	16.9 inches	19.6 inches	37.5 lbs.	32° to 104° F	500W	CE / FCC



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