Tsunami™

100BaseT/F Wireless Ethernet Bridge

Fast Ethernet Connectivity in a Wireless Solution

Tsunami 100BaseT/F is a wireless Ethernet bridge providing greater capacity and significantly lower cost than using dedicated DS-3 leased lines.

Using high-quality radio transmitters, standard IP links, and low-cost Ethernet switches, Tsunami 100BaseT/F Ethernet bridges greatly reduce the latency and processing overhead associated with DS-3 connections to IP routers and switches. Because it is wireless, Tsunami 100BaseT/F eliminates wire/fiber installation costs and recurring monthly fees—delivering carrier-class performance quickly, at an affordable price.

In addition to the Fast Ethernet connection, Tsunami 100BaseT/F also provides a separate T1 connection, allowing you to extend PBX connectivity between buildings without additional leased-line costs.

Extend or Enhance Your Network Virtually Overnight

With Tsunami 100BaseT/F, there are no leased-line hassles or natural or man-made barriers to overcome. Easy installation and operation allow network planners to quickly implement full 100BaseT/F Fast Ethernet capacity between networks, making it the ideal solution for:

- Organizations building out networks to include WAN connectivity between buildings, campuses, and remote locations
- Establishing high-speed connections between Internet or network service providers and their customers
- Service providers extending existing fiber and wire networks
- Organizations or service providers seeking network redundancy for mission-critical connections

About the Tsunami Product Family

The Tsunami family of Ethernet bridges provides wireless solutions that meet the growing demand for transparent and reliable high-speed network interconnectivity.

In addition to Tsunami 100BaseT/F, the Tsunami price-performance leader, the Tsunami product line includes:

Tsunami 10BaseT, a cost-effective, high-capacity alternative to multiple wireline T1 connections.

Tsunami 1000BaseSX, the world's first license-exempt Ethernet bridge to provide Gigabit, wireless connectivity using native IP.

PRODUCT HIGHLIGHTS

Double DS-3 Capacity
- Aggregate throughput to more than 200 Mbps (100 Mbps full duplex)
- Native IP preserved throughout the network with direct connections to Fast Ethernet switches

Rapid Return on Investment
- Fast payback compared to the costs of leasing DS-3 lines or trenching new fiber
- Next-day deployment enables faster service activation and payback

Fast and Easy to Deploy
- Multiple frequencies provide installation options for easy deployment and minimum interference with existing equipment
- Eliminates schedule delays due to fiber right-of-way issues

Carrier-Class Reliability
- Meets or exceeds traditional Telco wireline standards and requirements
- Longer distances and highest reliability due to superior system gain

KEY FEATURES

- Additional T1 or E1 for voice or data
- Multiple Capacities: 93, 206 or 208 Mbps aggregate throughput
- Frequency Ranges:
  5.3 GHz license-exempt,
  5.8 GHz license-exempt,
  5.3/5.8 GHz license-exempt, and
  23 GHz licensed
- Compliant with industry standards
- Network management through SNMP, HTTP, and Serial
- Point-to-point communications from less than 1 mile/km to more than 15 miles/24 km
- Built-in loopback, far-end monitoring, and private telephone network orderwire
- 2-year warranty

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Product Specifications

PRODUCT	TYPE	MODEL NUMBER	FREQUENCY BAND	AGGREGATE THROUGHPUT	CHANNEL PLANS	THRESHOLD (BER=1X10⁻⁶)	OUTPUT POWER (MINIMUM)	SYSTEM GAIN	DISTANCE (MILES/KM)
Tsunami 45	Single-band License-exempt	27750-51	5250-5350 MHz	93 Mbps	1 (A)	-79 dBm	+13 dBm	92 dB	<1 to >5/8
Tsunami 45	Single-band License-exempt	27710-51/2	5750.9-5798.9 MHz	93 Mbps	1 (A)	-79 dBm	+17 dBm	96 dB	<1 to >15/24
Tsunami 45	Licensed High-power	27400-51H	21200-23600 MHz	93 Mbps	24 (8 x A, B, C)	-77 dBm	+23 dBm	100 dB	<1 to >8/13
Tsunami 45	Licensed Low-power	27400-51L	21200-23600 MHz	93 Mbps	24 (8 x A, B, C)	-77 dBm	+17 dBm	94 dB	<1 to >5/8
Tsunami 100	Single-band License-exempt	28010-51/2	5725-5825 MHz	208 Mbps	1 (A)	-71 dBm	+16 dBm	87 dB	<1 to >5/8
Tsunami 100	Dual-band License-exempt	27720-51	5250-5350 MHz and 5725-5825 MHz	206 Mbps	1 (A)	-77 dBm	+10 dBm +17 dBm	87 dB	<1 to >5/8

System

Capacity	
Tsunami 45	45 Mbps full duplex (+T1/E1)
Tsunami 100	100 Mbps full duplex (+2xT1/E1)
Antenna Connector	N-Type female (license-exempt) WG Flange (UG-595) Integral (licensed)
RF Attenuation Range	20 dB, minimum (license-exempt models)
Maximum Receive Level	-30 dBm, error-free (license-exempt) -20 dBm, error-free (licensed)
Latency	<500 µS
Regulatory Compliance	FCC Part 15/Class B
Network Management	SNMP, Telnet (100 Mbps models only), HTTP web browser
Security	2^{48} security coding

Data Interface

Ethernet Interface	100BaseTX/FX
Connector	RJ-45 female and Fiber SC
Compliance	IEEE 802.3, 802.3u, 802.3d

Auxiliary Connections

Orderwire Handset	2-wire, RJ-11
VF Orderwire Bridge	600 ohm balanced, 4-wire, 0 dBm, DB9
Diagnostics Port	RS-232 (craft), DB9
Aux. Data Port (Clear Service Channel)	RS-232/RS-422, ≤9.6K baud, DB9
Alarm Port	2 ea. Form C, 6 TTL, DB9
Test Points	Output power, near- and far-end RSL (license-exempt) Output power, near-end RSL (licensed)
Wayside Channel(s)	T1 for 27710-51, 27750-51, 27400-51H/L 2xE1 for 27710-52 (optional second E1 occupies 2 Mbps of data bandwidth) 2 x T1 for 27720-51 2 x E1 for 28010-51⁄2

Power/Environment

DC Power	±20 to ±63 Volts, <45 Watts (license-exempt), <95 Watts (licensed)
Optional AC Adapter	100-250 Volts, 50-60 Hz
Power Connector	6-pin barrier strip, plug-in

Power/Environment (continued)

Operational Temperature	-30° to 55° C (license-exempt IDU[1] & licensed ODU[1]), -5 to +50° C (licensed IDU)
Humidity	0 to 95%, non-condensing
Altitude	15,000 feet/4572 meters, maximum

Physical Dimensions

Indoor Unit (IDU)

Size (WxHxD)	17.2 x 3.5 x 14.5 inches (license-exempt, excludes 100 Mbps 5.8 GHz) 43.7 x 8.9 x 36.8 cm (license-exempt, excludes 100 Mbps 5.8 GHz) 17.2 x 1.75 x 14.5 inches (23 GHz licensed) 43.7 x 4.4 x 36.8 cm (23 GHz licensed) 17.2 x 3.5 x 14.5 inches (100 Mbps 5.8 GHz) 43.7 x 8.9 x 36.8 cm (100 Mbps 5.8 GHz)
Weight	11 lbs/5 kg (license-exempt) 6.7 lbs/3.04 kg (licensed)

Outdoor Unit (ODU; Tsunami 45 23 GHz licensed & Tsunami 100 5.8 GHz models only)

Size (WxHxD)	8.0 x 10.0 x 4.5 inches (23 GHz) 9 x 13 x 5 inches (100 Mbps 5.8 GHz) 20.3 x 25.4 x 11.4 cm (23 GHz) 22.9 x 33 x 12.7 cm (100 Mbps 5.8 GHz)
Weight	11.4 lbs/5.17 kg (23 GHz) 20 lbs/9 kg (100 Mbps 5.8 GHz)

Mounting (Installation)

EIA Rack Mount	19 inch/48.2 cm, 2 rack unit (license-exempt) 10 inch/25.4 cm, 1 rack unit (23 GHz licensed) (mounting brackets supplied)

Frequency Channel Plans

Model Number	Channel Plan	Frequency
27750-51	A1/A2	5275/5325 MHz
27710-51/2	A1/A2	5750.9/5798.9 MHz
27400-51H/L	A1/A2	21225-21575/22425-22775 MHz
27400-51H/L	B1/B2	21625-21975/22825-23175 MHz
27400-51H/L	C1/C2	22025-22375/23225-23575 MHz
28010-51/2	A1/A2	5725/5825 MHz
27720-51	A1/A2	5300/5775 MHz

[1]ODU=Outdoor Unit (for 45L 23 GHz Licensed & 100 Mbps 5.8 GHz only), IDU=Indoor Unit