

# PTP 650 Network Indoor Unit (NIDU)

## VERTICAL MARKETS AND SOLUTIONS

### WIRELESS SERVICE PROVIDERS

- Macro-cell Backhaul (2G/3G)
- Leased Line Replacement
- Dedicated wireless internet access

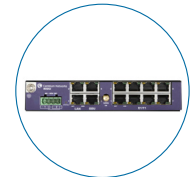
### ENTERPRISES

- Leased Line Replacement
- Inter-office connectivity and redundancy

## Description

Service providers and enterprises have invested significant time and resources into dedicated T1/E1 transmission systems. Based on TDM (Time Division Multiplexing), these circuits have been very popular and effective for voice and data long distance services, dedicated private lines and last mile access, but they are expensive.

There is a demand for a more cost effective solution that can reduce the dependency on leased lines and ease the transition to all-IP networks. Wireless broadband has proven to be an economical and reliable option. The PTP 650 Network IDU (NIDU) is a hardware device which enables the passing of T1/E1 TDM circuits over PTP 650 fixed wireless broadband connections. Using the NIDU, information from existing TDM circuits is delivered reliably, meeting the precise latency and jitter requirements needed for T1/E1 traffic. The NIDU combined with the PTP 650 delivers TDM traffic today while easing the migration to all-IP networks in the future whether for enterprise applications or Macro-cell backhaul for 2G/3G traffic.



PTP NIDU Front



PTP NIDU Front



PTP NIDU Angled

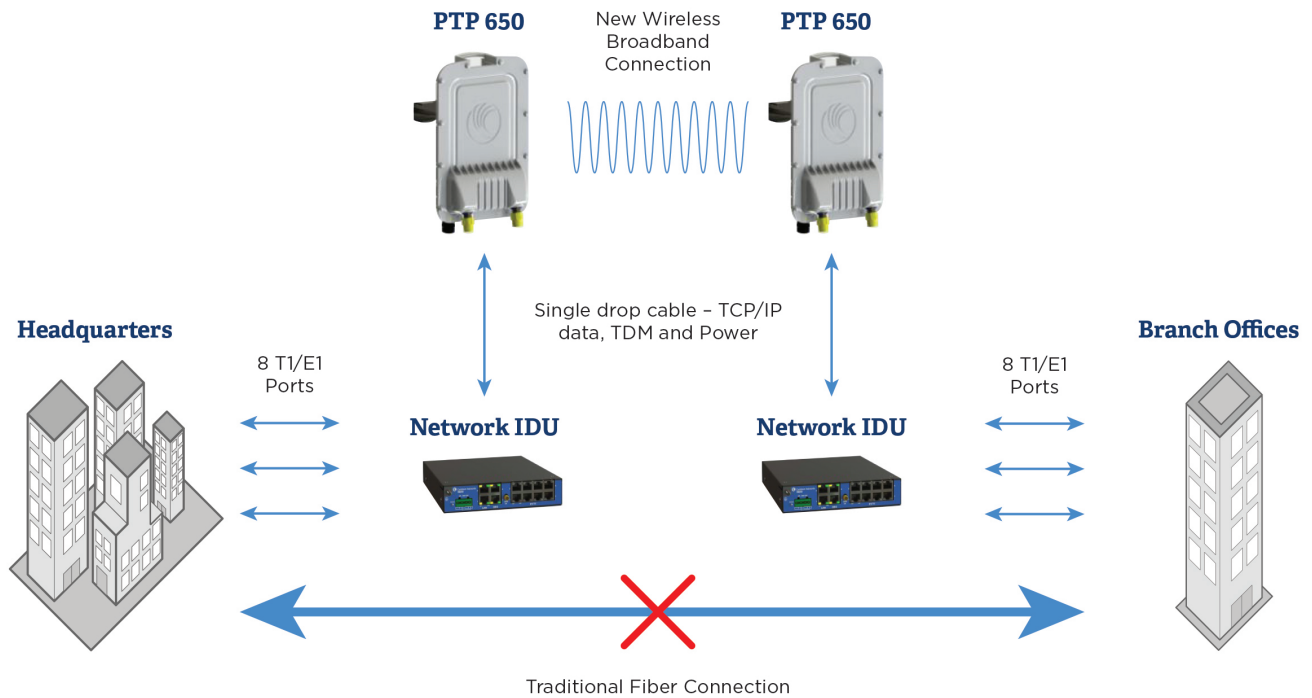
## Main Differentiators

- » **TDM TRAFFIC PRIORITY** TDM traffic is always placed in the highest priority queue for delivery over the air. The system uses a combination of lossless adaptive modulation, Dynamic Spectrum Optimization™ (DSO) and optimized air interface to provide reliable link availability for TDM traffic.
- » **HIGHLY ACCURATE CLOCK RECOVERY** The Network IDU TDM delivery solution leverages the PTP 650's highly accurate timing architecture to provide precise timing recovery for each of the 8 E1/T1 interfaces independently. This functionality enables precise latency control and low jitter from physical port to physical port.
- » **SIMPLE, EASY DEPLOYMENT** Cambium's TDM solution is designed for rapid deployment allowing for adding and removing of TDM circuits as demand changes. The Network IDU is managed from within the PTP 650 ODU's existing web or SNMP-based interfaces. The TDM and IP traffic co-exist with PoE on a single drop cable from the PTP 650 to the NIDU.

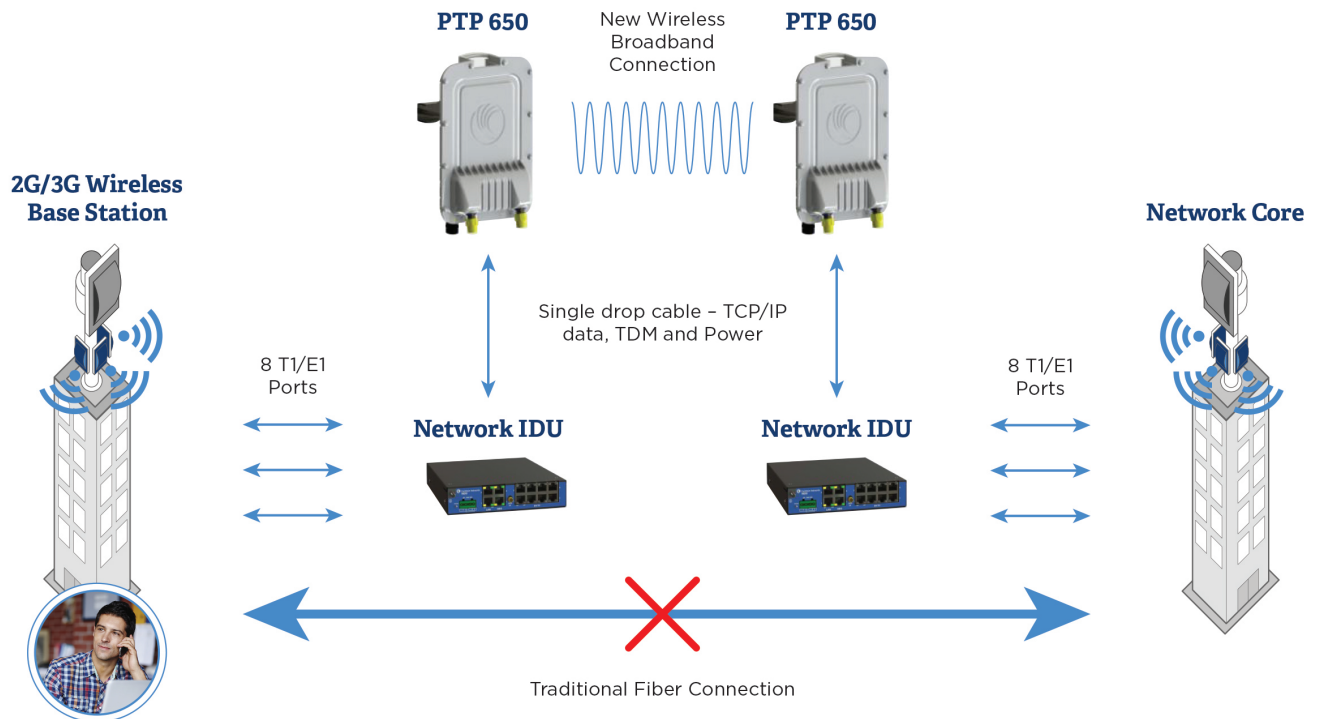
## Powerful Features

- Delivers up to 8 E1/T1 circuits over PTP650 wireless link
- Leverages precise timing protocol architecture of PTP 650 for controlling latency and jitter
- Single cable delivers PoE, TCP/IP data and TDM packets to the PTP 650
- Air interface optimizations for IP or TDM
- Jitter/Wander to ITU-T G.823/G.824
- Low consistent latency

### Enterprise Connectivity



### Macrocell Backhaul



CAMBIUM PRODUCT NAME	
HARDWARE SALES MODEL	C000065L043A
8-PORT E1/T1 TDM SOFTWARE LICENSE	C000065K049A
REGULATORY MODEL	PTP-NIDU
TDM SUPPORT AND NETWORKING	
SYSTEM TOPOLOGY	One Network IDU per END for up to 8 ports of T1/E1 traffic. Shares power with ODU from Cambium AC+DC Power Injector. Single drop cable from ODU to NIDU delivers TCP/IP and TDM traffic. Compatible with PTP 650 and PTP 650S.
# OF TDM PORTS	8 E1 or 8 T1
TIMING STANDARD (JITTER AND WANDER)	G.823/G.824
TIMING	Independent timing on each port compliant to G.823/G.824 Jitter/Wander specifications
LINE CODING	AMI, B8ZS/HDB3
LINE IMPEDANCE	100 / 120 Ohm
T1/E1 LATENCY (ONE WAY)	2 to 4 ms typical depending on range, bandwidth, modulation mode and number of T1/E1 ports; accurate T1/E1 latency figures can be determined for any given configuration using the Cambium PTP LINKPlanner
TIMING TRANSPORT	Leverages precision timing capabilities in PTP 650 platform
MANAGEMENT & INSTALLATION	
LED INDICATORS	Ethernet: Link/Activity/Alarm ODU: Link/Activity/Alarm E1/T1: TDM signal / TDM activity
NETWORK MANAGEMENT	All Network IDU management performed at ODU using existing ODU management interfaces (IPv6/v4 dual-stack management; Web Access via browser using HTTP or HTTPS/TLS; SNMP v1, v2c, v3, MIB-II and and proprietary PTP MIB)
LOOPBACK	Local and Far end
MOUNTING	Indoor unit; optional rack-mount kit available from Cambium
NETWORK CONNECTIONS	Standard CAT-5E
CONNECTION	Standard RJ-45; Total distance between ODU and NIDU is up to 330 feet (100meters). Total distance between NIDU and customer network connection is up to 330 feet (100meters).
COMPATIBILITY	Interoperates with PTP 650 and PTP 650S
PHYSICAL PORTS (I/O)	
POWER	4-pin DC input (one 4-pin connector included in kit)
E1/T1	8 E1/T1 RJ-45 ports
LAN	One Gigabit Ethernet RJ-45 (add'l spare for future applications)
ODU	One Gigabit Ethernet RJ-45 (add'l spare for future applications)
PHYSICAL AND ENVIRONMENTAL	
DIMENSIONS	218 mm X 172 mm X 32 mm; 8.6" X 6.8" X 1.3"
WEIGHT	.88kg; 1.95 lb
OPERATING TEMPERATURE	-40C to +60C, -40F to 140F
HUMIDITY	0 to 95%, non-condensing
POWER SUPPLY	DC feed from AC+DC power injector or 3rd party DC power supply
OPERATING VOLTAGE	40-60 VDC
POWER CONSUMPTION	<8 W
E1/T1 SURGE SUPPRESSION	Line side : 40V breakdown differential mode protection, complying with GR1089-Intrabuilding, IEC 61000-4-5 and TIA-968-A and -B (formerly known as FCC Part 68). IC side : 25V breakdown (differential) complying with standards as above Common mode protection provided via transformer with 1500Vrms isolation.
REGULATORY	
PROTECTION AND SAFETY	IEC60950-1 2nd Edition, EN60950-1, UL 60950-1 2nd Edition; CSA-22.2 No. 60950-1-07 2nd Edition
EMC	FCC Part 15 Subpart B - Class B; EN55022/CISPR22 Class B; EN301 489-1