

## Utility Analog Modems - Seamless Conversion to M2M Cellular

### The Problem

Older utility meters that use analog modems connected to Plain Old Telephone Service (POTS) copper line connections from monitoring station(s) to metering points are experiencing service delays, dependability issues, and increasing costs.

Due to the forthcoming phase out of copper wire line based phone circuits and limited data usage throughput, coupled with longer outage times for repair of down circuits, utilities must move to new TCP/IP enabled transport. Placement of these meters can be found several floors below ground, in older industrial plants and residential neighborhoods where the copper plant is inaccessible, and deteriorating.

Faced with new hurdles, from gaining reliable access to their older utility meters, Capital Expenditure (CAPEX) shortages, and non-TCP/IP solutions, utilities must move these existing meters to a cost effective, secure, and dependable digital IP backhaul without disrupting the existing equipment and operations or requiring an expensive forklift up grade.

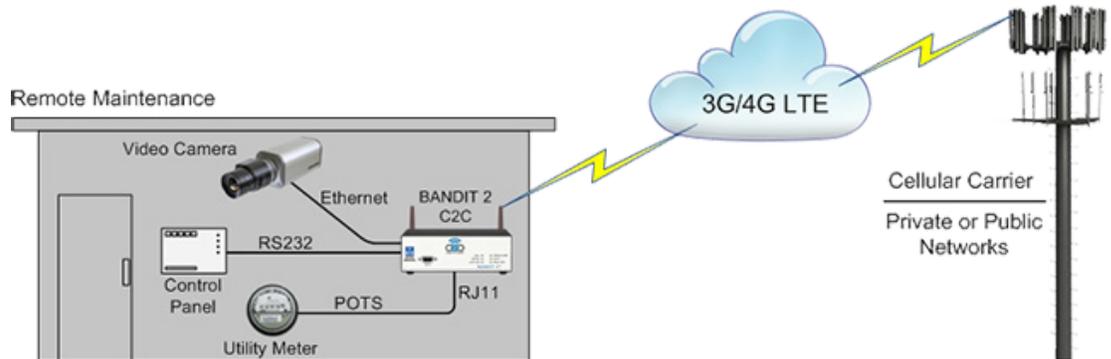
### The Solution

The solution is the Encore Networks industrially hardened BANDIT-2 C2C™ copper to cellular router. The BANDIT-2 C2C™ provides Internet Protocol (IP), VPN, Encryption, Firewall, Ethernet connectivity, legacy serial protocol and an end point facing Central Office analog modem transported via an embedded 3G cell modem on either a private or public IP network.

The Encore Networks solution is easy to implement, and eliminates the Operational Expenditure (OPEX) high costs of the existing copper lines while preserving the existing CAPEX. The switch from a copper phone line to a cellular data connection is simply done by unplugging the existing analog modem equipment from the copper line jack (RJ-11) and terminating it on the BANDIT-2 C2C™. The BANDIT-2 C2C™ handles the analog modem communications and packetizing of the data for transmission over a private or public 3G cellular network using a secure VPN with IPSec encryption to ensure end-to-end security.

The BANDIT-2 C2C™, using its dual antennas for signal diversification and the ability to be installed over 1500' from the existing analog modem with twisted copper pair, makes an easy installation in the most difficult areas. The BANDIT-2 C2C™ is capable of delivering IP/Ethernet based services at anytime at a fraction of the cost with its configurable Ethernet port addressing future TCP/IP based services and needs at the site. Increased bandwidth allows for additional equipment such as video and newer Smart Grid Meters.

### Application Diagram



## Technical Specifications

### Security Appliance Features

- ▶ Integrated router/firewall/VPN
- ▶ NAT, PrAT, eNAT-T
- ▶ VPN (up to 30 simultaneous tunnels)
  - IP Sec (RFC 2401) with DES (56 bit), 3DES (168 bit) and AES (256 bit)
  - G- RE (RFC 1701)
  - SLE (Selective Layer Encryption)

### Protocols

#### WAN Serial

- Frame Relay
- Asynchronous and Synchronous PPP
- MLPPP
- X.25

#### IP Ethernet

- IP Routing (RIP v1/v2) or Static Routing
- IPSec and SLE VPN
- VPN Split Tunneling
- DHCP Client/Server/Relay/BootP
- IP QoS and traffic prioritization
- VRRP (RFC3768)
- VLAN
- 802.1q VLAN tagging
- OSPF (RFC 2328)
- BGP-4 (RFP 4271)

### Data Modem Port

- Bell103, Bell212, V.21, V.22, V.22 bis, V.23, V.32, V.32 bis, V.34
- LS/GS
- Polarity Reversal
- V.42 with Error Correction - MNP 2-4
- V.42 bis w/ Data Compression & MNPS
- Rotary/DTMF

### Serial Legacy Support

- ▶ One DB25 port
- ▶ Supports multiple asynchronous and synchronous legacy protocols
- ▶ One DB9 serial console port supporting EIA/TIA RS232
- ▶ Protocol support for SCADA, DNP3, MODBUS, CDC, S/NET, CONITEL, ABB, and most electrical industry proprietary protocols; inquire for additional protocols

### Physical Ports

#### Serial

- 1 DB25 port (RS232) User port
- 1 DB9 port (RS232) console or User port

#### CO Modem

- 1 RJ11
- Signaling over 1500' using 24 gauge twisted pair

#### Ethernet

- 1 10/100 BASE T

#### Wireless - Embedded

- EVDO
- HSDPA
- 2 Antennas for Diversity

### Electrical

- ▶ Power Supply Options
  - 7.5 watts maximum
  - DC: 12VDC, 24VDC, 48VDC
  - AC: 100-240VAC, 50-60Hz (with external adapter)

### Environmental

- ▶ Temperature:
  - Industrially hardened: -40° C to +85° C - DC
  - -30° C to +70° C - AC
  - Commercial-grade: 0° C to +50° C
  - Cellular Wireless: -40° C to +70° C
  - Non-Operating: -40° C to +85° C
- ▶ Humidity: 5% to 95% non-condensing
- ▶ Altitude: Up to 10,000 ft. (Up to 3048 m)

### Mechanical

- Height:** 1.5 in. (3.81 cm)
- Width:** 6.0 in (15.24 cm)
- Depth:** 4.4 in. (11.18 cm)
- Weight:** Less than 1 lb. (Less than 0.45 kg)
- Installation Type:** Desktop

### Standards Compliance

- ▶ RoHS Compliant
- ▶ EMC
  - FCC Part 15
  - EN 55022: 1998
  - EN 55024: 1998
- ▶ Product Safety
  - UL/CSA 60950-1
  - CAN/CSA-C22.2 No. 60950-1-03
  - EN 60950-1
- ▶ NERC CIP (003, 005, 007, 009) Compliant
- ▶ Part Number: B2000-C2C-0000-0



## BANDIT 2™ C2C™



(Specifications subject to change)

