Cobham NETNode IP mesh radios are the latest innovations in the expanding range of Cobham Tactical Communications and Surveillance solutions improving surveillance connectivity.

NETNode IP radios can be combined in a fluid self forming, self healing mesh containing up to eight radios. The NETNode radios within the mesh exchange data on a single frequency, simplifying frequency management. The entire mesh occupies just 2.5MHz of bandwidth (3.0, 3.5, 5.0 and 6.0MHz also available). The NETNode radios employ the unique Cobham COFDM modulation scheme and therefore offer excellent RF penetration and performance in the presence of multipath.

The NETNode mesh radios can provide up over 5.0 (6.0)Mb/s of IP data (data rate depends on mode, number of nodes and range between nodes). This available bit-rate can be used to exchange IP data traffic between nodes.

The highly flexible mesh topology means that data can be exchanged between nodes in a point-to-point or multi-point fashion; range can be extended by using nodes as repeaters. The self-forming, self-healing mesh architecture makes the NETNode product ideal for use in mobile surveillance applications, command and control applications, or advanced robotics.

The NETNode can be connected to third party composite cameras using the NETAV option. Two PTZ control channels are available to enable control of third party PTZ cameras. Alternatively, there are two dedicated PTZ camera solutions available for direct connection to the NETNode: CAMPTZ* is a high performance, high quality day/night PTZ camera for long range and overt surveillance; CAMuPT is a miniature pan and tilt camera suitable for up-close surveillance. The CAMuPT and CAMPTZ* options require the NETAV option to be fitted. Third party IP cameras can also be directly connected to the NETNode.

Security of the entire mesh network can be ensured by the use of the optional AES128 or AES256 encryption.

Control of the deployed mesh is achieved using the inbuilt web browser or comprehensive Mission Commander PC application. This software suite, based around a mapping display, is used to configure and monitor the mesh and wider Cobham Surveillance systems, and to control its nodes and cameras. Video can be viewed on the PC device using the Mission Commander software and recorded using Milestone Compatible recorders.
**Specifications:**

**Interfaces:**
- **RF Interfaces (Antenna 1 and 2):** N-Type
- **Power and Ethernet:** Amphenol 38999 Series 3
- **Control and misc I/O:** Amphenol 38999 Series 3
- **Camera (A/V):** Amphenol 38999 Series 3

**Typical range:**
- **NETNode-R-217250 (1W):** Non Line of Sight Light urban 500-700m Line of Sight 40km+

**RF Interfaces**
- **Antenna 1:** Switched transmit receive antenna
- **Antenna 2:** Receive only antenna

**RF and modulation**
- **Output frequency:** 220 to 240MHz*, 340 to 470MHz*, 450 to 670MHz*, 1150 to 1400MHz*, 1650 to 2380MHz*, 2170 to 2500MHz*, 4400 to 5000MHz, or 5500 to 6000MHz*  
  Tuning step size: 125kHz step

**Output power**
- +30 to 10dBm in 0.25dB steps  
  C-band 1W +/- 3dB

**Bandwidth**
- 2.5, 3.0, 3.5, 5.0, 6.0MHz

**Modulation**
- COFDM 360 carrier modulation

**Carrier Modulation**
- QPSK/16QAM (adaptive)

**FEC rate**
- FEC1/2

**Receive diversity**
- Maximum Ratio Combining

**Receive sensitivity**
- -98dBm for most robust mode

**IP interface**
- Primary and secondary ethernet electrical: 100BaseT Ethernet

**IP address allocation**
- DHCP dynamic IP addressing/Static IP

**Video and audio streaming format**
- Multicast VLC compatible RTSP Support

**A/V input option**
- Video input: Composite or SDI (selectable)
- Video format: 525 or 625 (PAL or NTSC)
- Video encoding: MPEG4
- Quality: User selectable quality level
- Video bit-rate: 2.4Mb/s to 50kb/s (variable)
- Resolution: 704, 576, 480, 352 or SIF (1/4)
- Frame rate: Self selecting 30 to 2F/s
- Audio input: Line level or microphone level
- Audio sample frequency: 48kHz
- Audio encoding: MPEG audio layer 1
- Audio bit-rate: 384 to 64kb/s

**Store and Forward options**
- Storage format: SD card interface (Secure Digital card)
- Record options: Continuous or triggered (Milestone)
- Files download: From web browser interface/RTSP
- Video and audio clip size: 30 seconds

**Open Audio comms channel (shared voice channel)**
- Multi-user audio comms channel
  - Interface microphone level/headphone o/p
  - Compression channel
  - G726 32kb/s audio 8kHz sampling and mute

**Encryption**
- Type: AES128 or AES256 (both optional)

**GPS**
- Dedicated GPS interface RS232/RS485

**Data interface**
- RS232/RS485 data input
  - (shared with user camera control)
  - 1K2 to 115K2 baud switchable
  - With UDP and TCP routing protocol

**PTZ camera interface (with AVI fitted)**
- User camera type: PAL or NTSC
- User camera control: From Mesh Commander PC application using VISCA, PELCOD or PELCOP
- From any user supplied desk controller
  - Requires RS232/RS485 interface

**NETNode camera options**
- CAMPTZ long range Pan Tilt Zoom
- CAMPuPT short range Pan Tilt

**Triggers**
- **Trigger source:** Third party equipment remote trigger (e.g. PIR etc)
- User pre-set time trigger
- Video motion detection (NETAV option)*
- Audio level*

**Trigger action**
- Start to transmit (silence mode)
- Activate video stream (NETAV option)
- Activate audio stream (NETAV option)
- Move camera to preset position
- Activate local store feature

**Control**
- **Local control:** LEDs power and mesh status
- **Remote control:** Mission Commander PC application
  - Full control of all parameters in a map based application
  - Web Browser control

**Physical**
- **Sealing:** IP66 Minimum
- **Dimensions:** H 160mm, W 160mm, D 60mm
- **Mounting options base unit:** Tripod mount and through hole screws
- **Mounting options adaptation plate:** Pole mounting kit
- **Weight:** 1.56kg

**Power**
- **DC input:** 12-14V
- **Power consumed 1W:** 10W

**Environment**
- **Temperature range:** -10 to 50 deg C

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*Data rounded to nearest whole number

**www.cobham.com/tcs**
Product Code:
NETNode-R-217250  IP Mesh Node 1W 2.17-2.50GHz
(excl Ants & PSU)

NETNode-R-440500  IP Mesh Node 1W 4.4-5.0GHz
(excl Ants & PSU)

Product Code Includes:
CA403  Power & Ethernet external cable 5m
CA406  Control & Data external cable 2m
CAS9  Headset adaptor cable

Accessory Options:
NETNode-AVI-UP3R  Composite Video and Audio input for COPDM IP Mesh Node Robust
PSU12/4  AC Power supply for Robust Mesh node
PSU15/5  AC Power Supply IP66 Robust Mesh Node
CAMPTZ*  Pan, Tilt and Zoom camera for NETNode
CAMuPT  Micro Pan and Tilt camera for NETNode
NETIPHW  IP in with either 1, 2 or 4 Video and 2, 4 or 8 Audio Out Decoder
Mission Commander  Control system
SOLBAT3  14.8V Lithium Battery

Licensing Options:
AES128NN  Adds 128 bit AES Encryption
AES256NN  Adds 256 bit AES Encryption

Note: AES may be subject to export control

* Starred items in italics will be supported in future releases

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