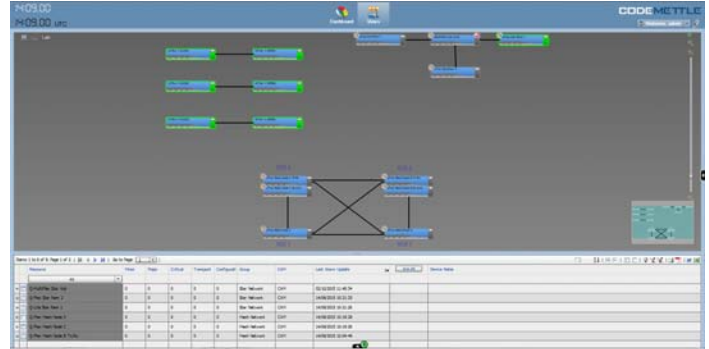


Satellite Communications System

One System, Boundless Connectivity

OVERVIEW

Q-NET™ is a scalable satellite communications system that supports highly-efficient bandwidth technology and sophisticated carrier and traffic management. It supports all types of network including star, full/partial mesh, point-to-point and hybrids. No expensive hub; no double hops (in mesh mode); free fully-functional NMS (no annual maintenance charge); optional advanced NMS for power users.



Q-NET™ Bandwidth Manager provides carrier planning and system monitoring functions.

FLEXIBILITY

Unlike any other satellite system, **Q-NET™** is based on a single, highly versatile satellite component, namely, the **Q-Flex™** modem, which provides modulator, demodulator and multi-demodulator functions, as well as being a single-box solution for all your advanced IP processing requirements such as traffic shaping, TCP acceleration and ACM.

By using the same versatile satellite components at every site, **Q-NET™** is readily configurable to meet your network needs now and in the future.

SCALABILITY

Q-NET™ is a modular system that allows your network to grow in response to new network requirements. Because there is no fixed-cost hub component, **Q-NET™** starts out as a low - cost system and can be readily expanded without breaking the bank.

EFFICIENCY

Q-NET™ uses the ultra-efficient DVB-S2X waveform for the outbound carrier. The inbound carriers can be SCPC or dynamic SCPC. Carrier overlap technology allows the inbound carriers to be placed in the same space segment as the shared outbound.

Q-NET™ Bandwidth Manager uses a novel dynamic SCPC technology that allocates bandwidth on demand in response to changing traffic patterns. Carriers are resized dynamically with no traffic loss.



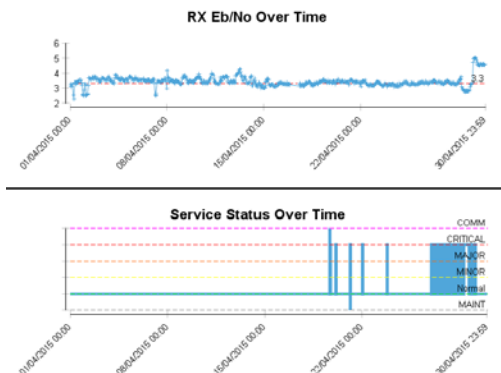
KEY COMPONENTS

Q-NET™ Bandwidth Manager provides multi-satellite/transponder carrier planning and high-level system control, monitoring, recording and quality-of-service reporting. It runs on standard network server hardware and is accessed via web browser client sessions.

Q-NET™ Navigator allows all modems (and other network devices) in the system to be controlled through a single application. It provides control over all modem and multi-demodulator functions, using an easy-to-navigate site map, which also displays the real-time alarm status of each modem. It complements the high-level control provided by the Bandwidth Manager and the two NMS applications can be used separately or in conjunction with each other.

Q-MultiFlex™, Q-Flex™ and Q-Lite™ satellite modems. These represent the state-of-the-art in terms of satellite modem technology, with support for the DVB-S2X standard and an advanced IP single-box solution.

The **Q-Flex™** is a software-defined IF/L-band modem that can be converted to a **Q-MultiFlex™** (modulator/multi-demodulator) with the addition of one or more add-on cards. The **Q-Lite™** is a compact form of the **Q-Flex™** that is suitable for comms-on-the-move.



BENEFITS

- ▶ **One system, boundless connectivity.** Uses a single building block for all types of networks, simplifying network expansion, operator training and logistics
- ▶ **Simple IP.** Single-box satellite modem solution for advanced IP, including traffic shaping, TCP acceleration, compression, VLANs and ACM
- ▶ **Bandwidth efficiency.** Supports the highly-efficient DVB-S2X standard; low roll-offs on outbound and inbounds
- ▶ **Control at your finger-tips.** Choose between a fully-featured NMS for power users, or for those on a tight budget, a free version (suitable for small to medium sized networks) with no annual support charge
- ▶ **Low cost.** No expensive hub installation. Scales from very small to very large networks with minimal box count and no fixed hub costs
- ▶ **'Open' network.** NMS can be readily used with other vendors' satellite and network devices, keeping you in charge of your future network expansion options
- ▶ **LinkGuard™ interference detection.** Automatically detects interference underneath your carriers, 24x7, while passing traffic
- ▶ **QoS reports.** Generate QoS metrics reports that show system SLA performance



Q-NET™ Navigator provides simple and intuitive network control and monitoring.



Q-NET™: One system, boundless connectivity.

SCPC versus TDMA

Trying to choose the best technology and the best product is difficult. The industry is littered with competing claims and counter claims.

SCPC and TDMA technologies have their well-known strengths and weaknesses. Some solutions harness both in an effort to present the best of both worlds. However, two lots of hardware equates to two lots of cost! Also, you either have to manage separate pools of bandwidth for TDMA and SCPC or you convert carriers dynamically between TDMA and SCPC. Both introduce further inefficiencies due to the obvious lack of flexibility involved.

The Paradise view is that there is a middle ground where SCPC and TDMA truly compete. By adding innovative, slick SCPC carrier management, allowing intelligent dynamic bandwidth on demand, the bandwidth efficiencies of SCPC can be viably extended to include a significant portion of the traditional TDMA VSAT market.

Q-NET™ has been designed to power next-generation satellite communications. One system, boundless connectivity.

How does Q-NET™ work in practice?

Q-NET™ can be best understood by explaining how to set up a point-to-multipoint network. Using the example of a full mesh:

- Each site generates a shared SCPC carrier that is received by all the other sites.
- Each site receives an SCPC carrier from every other site. Each Q-MultiFlex™ has an optional modulator and up to 16 demodulators; all use the same FEC for transmit and receive. Q-MultiFlex™ units are cascaded together in order to increase the number of demods that share the outbound. There is no limit to how large the network can scale.
- Each demod is programmed to receive a different centre frequency. The outputs from the inbound carriers are multiplexed together and output to the local network.
- Packet management options include bridging (Layer 2) and routing (Layer 3). Typically, VLANs are used to separate traffic for each site and allow the outbound to be partitioned according to the needs of the remote sites. The remote sites filter on the VLANs of interest, untagging the VLAN traffic and passing the traffic on to the local network.
- No hub is required and there are no double satellite hops.

Markets and Applications

- ▶ VSAT
- ▶ Point-to-point/multipoint IP
- ▶ Star, mesh and hybrids
- ▶ Cellular backhaul
- ▶ Corporate networks
- ▶ ISPs/trunking
- ▶ Oil/gas
- ▶ Maritime/cruise
- ▶ Government



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