



Multiservice Access Concentrators

Bridging today's applications with tomorrow's networks

- VoIP Support
- Maximize Bandwidth
- Voice, Video and Data Traffic
- Legacy Support
- Crypto Support
- Unique Tactical Interfaces
- QoS For All Applications
- Compact and Scalable
- Easily Racked in Vans

Overview

DNE's TAC Multi-Service Access Concentrator line bridges today's applications with tomorrow's high-speed networks. These versatile and scalable products transport packet-based traffic over both tactical satellite networks or Wide Area Networks. Compact and lightweight, the TAC product line supports emerging military applications, such as imagery and Internet Protocol (IP), using unique technology to improve network performance and throughput.

Migration to an all-IP network can begin today with DNE's TAC products. DNE's Multi-Service Access Concentrators relieve bottlenecks at network access points with traffic management policies that offer fair sharing of all the available bandwidth among multiple IP users. The TAC product line uses industry-standard protocols to guarantee the delivery of critical and time-sensitive information.

DNE's TAC Multi-Service Access Concentrators offer a wide variety of interfaces to connect legacy applications to a high-availability, fully-meshed packet network.

Applications such as STU/STE, FNBDT Secure telephony, and low-speed data lines (to 75 baud) - as well as both bulk and in-line encryption - are fully supported. The versatility and variety of these interfaces permit rapid deployment and improved network efficiency for users.

The TAC Multi-Service Access Concentrator product line features two separate models, offering a unique combination of access technology solutions. The smaller TAC-300 Concentrators are designed to bring high-speed network access to remote sites. The larger TAC-900 Concentrators can serve as a centralized switching point for a managed network and offers extended features such as redundancy and increased management capabilities.

Overview

The TAC's small form factor, light weight, ease of setup, and wide variety of configuration options support hub and remote deployments as well as the need for higher interface densities. At a mere seven inches high, the TAC-900 can support up to 54 unique network user interfaces, freeing up valuable rack space and providing significant weight reductions for mobile units. The TAC's high port count and scalability offers the flexibility to meet both planned and unanticipated requirements – quickly and easily.

DNE's TAC Multi-Service Access Concentrator line supports a wide range of aggregate rates, from 64k to OC-3c/STM-1. These rates surpass the capability of current DoD multiplexing equipment and offer a transition path for legacy applications to successfully operate over higher-speed networks. The transition path allows communication equipment to be upgraded in small increments rather than requiring an extensive network overhaul. The variety of interfaces permit the TAC units to be quickly integrated into today's network and the anticipated broadband infrastructure for the future.

The TAC Multi-Service Access Concentrator line offers the most efficient throughput in the industry while maintaining QoS across a wide range of applications. Low-cost, lightweight and highly flexible, DNE's TAC Multi-Service Access Concentration products are ideal for supporting network migration toward NetCentric Warfare.

Product Descriptions

Each TAC-300 can be configured with one network Interface module (XPOD) and two Interface Modules (IPODs). The modules are interchangeable between TAC-300 units and the larger TAC-900.

The TAC-300 chassis is equipped with an AC Power supply and has a wide variety of interface option cards available to fulfill most networking interface needs (cards sold separately).

The TAC-900 features up to three Interface Control Modules - Ethernet (ICM-E's) which include cell and packet subsystems that can switch simultaneously. Each ICM-E holds one XPOD and two IPODs, and at least one ICM-E is required per TAC-900. In addition, DNE's TAC-900 comes equipped with two 300W AC Power Supplies to provide power redundancy.

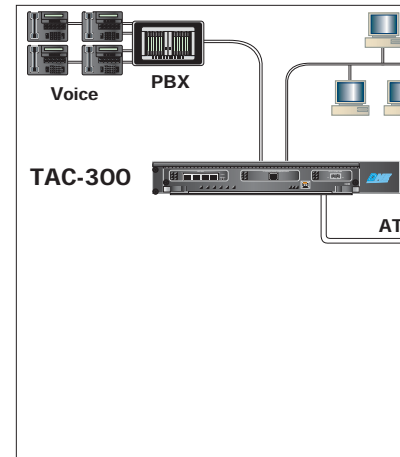
The TAC-900 is compatible with the smaller TAC-300 units, and all XPODs and IPODs are interchangeable between all DNE TAC units. ICM-Es must be ordered separately at the time of order.

System Utility Modules (SUMs) available in the TAC-900 provide interfaces for management and timing functions, as well as relay closures to indicate external alarms. SUMs can be made redundant to maximize network up-time. SUMs come in two versions: a SUM-100 (two required per chassis) or a SUM-200 which provides additional features such as Stratum-3 internal clocking.

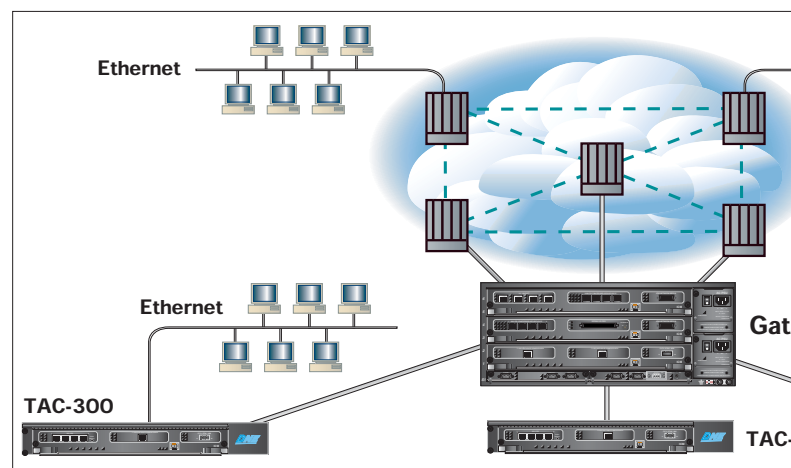
Serial Interfaces

DNE offers a unique 20Mbps synchronous WAN interface in both a four-port or single port configuration, which allows ATM cell-bearing serial data streams to be passed into a cryptographic device or a modem. This interface also offers an optional protocol to detect a loss of crypto synchronization and can inform the crypto device to re-sync the signal. Two versions of crypto resync are available: either a "transparent" or an "in-line" protocol. This allows network traffic to pass over satellite or radio connections without a loss of data.

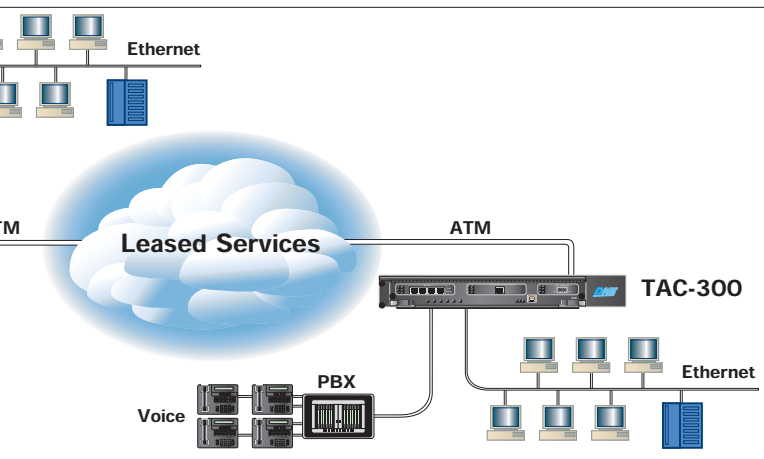
A universal synchronous LS-CES interface has eight ports, and allows multiplexers and routers to access the network while running at their native data rates from 72 bps to 2,048kbps. All eight ports can run at rates up to 2,048kbps simultaneously, passing as much as 16,384kbps per card.



Ethernet network traffic and voice being passed over ATM. Bit Rate (VBR) or Unspecified Bit Rate (UBR), interworking.



The TAC-900 acting as a centralized hub for WAN IP traffic. Redundancy and management features are available in the TAC-900 to the smaller TAC-300 units. SVCs can be set to reroute network traffic in the event of a failure. Down, CVR, VBR, and UBR ATM services are all supported.



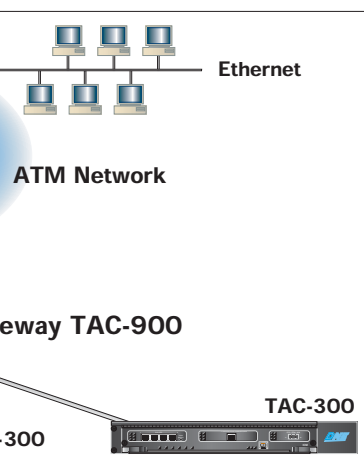
passed onto an ATM network. The ATM service can be Constant Bit Rate (CBR), Variable Bit Rate (VBR), or Asynchronous Transfer Mode (ATM). The TAC devices also can handle video teleconferencing, multiplexers, routers, and IP

Management

Exceptional management of networking nodes, using industry-standard protocols, builds seamless access across DNE's Access products for services such as ATM, IP, or private lines. Key benefits include: multiservice performance management from a single platform, broad configuration, security support, and reduced operating costs.

Native LAN Services

The TAC products support both IP bridging and routing over 10mb or 100mb Ethernet ports. Each TAC Control Module supports 8 IP bridge groups and each bridge group may support 495 virtual circuit tunnels. The TAC bridge is a "learning bridge" that stores up to 2048 MAC addresses to filter unnecessary traffic off the ATM trunks. The TAC Control Module supports a RIP2 IP router that is suitable for small user groups. IP traffic may be sent over PVC or A-SPVC connections with user-selectable CBR, VBR, or UBR class of service.



ent features can be provided from the TAC-300 device in the event of a node failure or traffic slow-

ICM-E

The ICM-E (Interface Control Module-Ethernet) houses the intelligence of the unit - the "motherboard." It provides an integral single-port 10/100 Ethernet interface, and the unit's cell and packet subsystems. The ICM-E features a switching module and three option slots: an XPOD, used to pass a cell stream to another network device (such as a switch) or the network; and two IPODs, to adapt customer premise equipment or pass cell streams.

A 10/100 Base-T Ethernet port is included in each ICM-E, which supports transparent LAN services. Data traffic is supported by AAL5 LAN switching, circuit emulation with A+B bit interpretation, and dynamic bandwidth allocation over AAL1. High accuracy serial traffic can be transported using DNE's unique Serial WAN interface.

The ICM-E also serves as the data bus that connects the IPODs, the XPOD, and the Protocol Accelerator to the switching module. The Protocol Accelerator is capable of processing 200,000 data packets per second, and permits the TAC to transfer a fully loaded 100Mbps Ethernet span onto an OC-3 ring in a non-blocking fashion.

This bus is capable of transferring up to 425,000 cells/second to the switching module, which itself switches at up to 1.6Gbps and is capable of switching data from any port to any port on the ICM-E. The TAC-900 connects the switching modules across a backplane bus to extend the switching capability within the entire TAC-900.

Voice Solutions

DNE's set of AAL2 Voice solutions can address a wide variety of Voice applications in a very bandwidth efficient manner. FAX can be handled (depending on the Voice Card selected) in either a Bypass or FAX/ Relay mode.

Secure Voice

DNE offers a unique capability - a DSP (Digital Signal Processor)-based Secure voice interface that minimizes bandwidth in Secure and clear-channel modes using a STU-III military Secure phone (or STE in STU mode). When in normal mode, the AAL2 compression system uses G.729a (CS-ACELP 8kbps) or G.726 (ADPCM 16, 24, or 32kbps) algorithms. A cell fill, cell delay algorithm is used to ensure that the minimum cell bandwidth is utilized.

When a phone goes Secure, the DSP switches to Secure mode, and the phones at each end of the link negotiate the best analog bandwidth (2.4 kbps, 4.8kbps or 9.6kbps for STU-III/STE, 2.4k for FNBDT). Once the call is negotiated, the DSP performs a demodulation/modulation function, using only the negotiated bandwidth for the duration of the Secure call. Other products bypass to 64kbps during the modem portion of a Secure call - wasting precious bandwidth.

This Secure/Compressed voice solution is available in a 4-port analog (FXS or E&M) interface, a 24-channel T1 digital interface, and a 30-channel E-1 digital interface.

TAC-300

TAC-900

Control Modules	One Interface Control Module - Ethernet (ICM-E) with one WAN Interface Module (XPOD), up to two Interface Module Options (IPODs), and built-in 10/100 Base-T Ethernet Port	Three Interface Control Modules - Ethernet (ICM-E), each with one WAN (XPOD), up to two Interface Module Options (IPODs), and built-in 10/100 Base-T Ethernet Port
Trunk Speeds	DS1, E1, DS3, OC-3/STM-1, 20Mb Serial, T1 IMA (4 ports or 8 ports), E1 IMA (4 ports or 8 ports)	
ICM-Es	Each ICM-E contains one CPOD Switch Processor Module, one built-in 10M/100M Ethernet Port, 32 Mb of RAM for system processor, and 4 Mb packet memory	
ICM-E Support	One (Not Interchangeable with the TAC-900 ICM-Es)	Up to three ICM-Es (Not interchangeable with the TAC-300 ICM-Es)
Expansion Protocol Option Devices (XPOD)	20Mb Serial ATM (1 port), DS1 ATM (1 port), E1 ATM (1 port), OC3/STM-ATM (1 port, singlemode or multimode), DS3 ATM (1 port)	
Interface Protocol Option Devices (IPOD)	20Mb Serial ATM (4 ports), DS1 ATM (4 ports), E1 ATM (4 ports), DS3 ATM (2 ports), DS1 Circuit Emulation (4 ports), E1 Circuit Emulation (4 ports), 10/100 Base-T Ethernet (4 ports), Analog (FXS) Voice Compression with fax/modem bypass (4 ports), DS1 24-channel Voice Compression with fax/modem bypass (1 port), E1 30-channel Voice Compression with fax/modem bypass (1 port), Analog (FXS and E&M) Compressed/Secure Voice Interface (4 ports), T1 Compressed/Secure Voice Digital Interface (24 Channels), E1 Compressed/Secure Voice Digital Interface (30 Channels), OC-3/STM-1 ATM (1 or 2 ports, singlemode or multimode), 2 Mb Serial LS-CES (8 ports), Serial Framed Services (2 ports), T1 IMA (4 ports or 8 ports), E1 IMA (4 ports or 8 ports), V.34 Compressed Secure Voice (FNBDT - FXS, FXO, E&M, T1 or E1)	
SUM Modules	Not Applicable	SUM 100, SUM 200
SUM 100	--	Two RS-232 craft interface ports for management, timing loopback and alarm relay functions
SUM 200	--	T1 BITS wire wrap connector & E1 BNC connector for primary and secondary clock timing input, Stratum-3 internal clock with holdover
Network Support	Synchronous Data over AAL1, Analog/Digital Voice Compression with fax/modem bypass, LAN switching over AAL5, Native ATM cell switching, Compressed Voice over AAL2, LS-CES Serial (including crypto traffic), Transport Video over AAL1/AAL5	
Management Interfaces	SNMP-MIB-II, ATOM MIB, ILMI-MIB, CES v2 MIB, Interface MIB's, Bridging MIB and Broadband Access Enterprise MIB, http/Java™ via Web browser, Local craft, VT 100ANSI, Ethernet Port, In-band ATM, Telnet/FTP	
Connection Flexibility	PVC, S-PVC, SVC, A-SPVC	
Power	AC-Power Supply Unit (PSU): 90 to 132 VAC, or 180 to 264 VAC, 47-63 Hz, Fan Cooled Autosensing 100W PSU, -1A draw (max. at 120 VAC)	Two redundant 300W power supplies,
Dimensions	17.5" W x 12.0" D x 2.35" H 13.5 lbs fully loaded	17.5" W x 12.0" D x 7.0" H 34.0 lbs fully loaded
Environmental	0 ⁰ to 40 ⁰ C Operating, -40 ⁰ to 70 ⁰ C Storage, 5 to 95% Humidity (non-condensing), -500ft to 10,000ft (-152m to 3048m)	
System Clocking	Clock Sources: Internal Reference Oscillator, recovered from user-specified interface	



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