

EL860

CCM/VCM/ACM Shaper and Encapsulator

Elevation Product Family



Description

The EL860 Shaper and Encapsulator is a unique appliance that combines a number of advanced multilevel IP traffic policing and real time shaping functionalities with an industry leading DVB-S2 IP encapsulator and a DVB-S2 modulation parameter controller. The EL860 enables Constant Coding and Modulation (CCM), Variable Coding and Modulation (VCM) and Adaptive Coding and Modulation (ACM) implementations in the forward link of satellite star services applications, such as IP trunking networks. The EL860 is to be installed in front of a DVB-S2 modulator, at the hub side of such network.

As corporate and private users demand more and more bandwidth, service providers need to apply sophisticated traffic policing and shaping mechanisms in order to ensure that the available bandwidth is distributed in the most appropriate manner among the users of the satellite network.

With the EL860 it is possible to restrict the maximum given peak bandwidth for each user, for groups of users and for groups of remote sites. Moreover, guaranteed bandwidths and weighting factors for the distribution of the overall available bandwidth of a satellite link can be configured with the same granularity. The traffic policing engine also allows the distribution of available bandwidth among services in order to e.g. prioritize VoIP traffic. Both, the hierarchical grouping structures as well as the traffic policing rules can be on-the-fly reconfigured without causing any downtime.

As a unique functionality, the EL860 provides an adaptive traffic shaping engine, which makes it the first choice for shaping the traffic of networks where the throughput of the link is varying over time – as it is the case in DVB-S2 Adaptive Coding and Modulation (ACM) networks.

The EL860 encapsulates the shaped IP traffic in DVB-S2 Base-Band Frames that are ready to be processed by an external DVB-S2 modulator such as the EL170 or EL178.

With its embedded FlexACM controller, the EL860 monitors the signal reception conditions at the FlexACM-enabled remote sites of the network and selects dynamically and automatically the most efficient modulation and coding parameters for each Base Band Frame. The bandwidth of the satellite link managed by the EL860 is therefore always utilized in the most efficient manner while the traffic shaping engine automatically adapts on-the-fly to the resulting bandwidth variations.

Alternatively, the EL860 can be used in VCM (Variable Coding and Modulation) networks, where different modulation parameters are selected for each destination in a fixed manner. The adaptive traffic shaping of the EL860 will allow a dynamic distribution of the total bandwidth among the remote sites.

The EL860 ACM also supports simpler DVB-S2 modulation modes like CCM (Constant Coding and Modulation), where all data frames are modulated with the same fixed parameters.

For further improvement of the users' download and web surfing experience the EL860 can be combined with the EL840 PEP-Box® Server performance enhancer appliance, which delivers a superior set of TCP and application acceleration as well as compression techniques.

Key Features

- Out-of-the-box solution – no additional hardware or software needed
- Three shaping hierarchy levels, e.g. users, groups of users and groups of user groups
- Supports Peak Information Rate (PIR) policies
- Supports equal and weighted bandwidth distribution
- Hierarchies and policies can be changed on-the-fly
- Adaptive traffic shaping
- Automated interfacing with remote demodulators for ACM control
- MPE, XPE or ULE encapsulation
- DVB-S2 Base Band Frame interface to the modulator
- Optional VCM operation
- Optional ACM operation with FlexACM controller

Main Advantages

- Instant exploitation of DVB-S2 ACM
- Reduces bandwidth costs and increases revenues
- Boosts service performance
- Speeds up time-to-market
- Seamless integration into existing infrastructure
- High versatility and flexibility
- Easy to integrate and operate
- Truly automated ACM

Applications

- IP Trunking
- VSAT Networks
- Corporate Networks

Related Products

EL820 PEP-Box® Terminal
EL830 PEP-Box® Gateway
EL840 PEP-Box® Server
EL170 Satellite IP Modulator
EL178 High Speed IP Modulator
EL470 Satellite IP Modem
EL478 High Speed IP Modem

Related Docs

FlexACM® Application note



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General

System Architecture

- Real time adaptive traffic shaper
- Operates in stand-alone or in combination with the EL840 PEP-Box® Server
- Functions as router (OSI layer 3) or bridge (OSI layer 2) via network
- Acting as FlexACM controller for remote demodulators
- Acting as IP/DVB-S2 encapsulator for hub site modulator (optional)
- Linux OS based
- Built-in CPU watchdog and RAM-usage monitoring

Physical/Hardware

- 1RU, width: 19", depth: 60 cm, weight: 11,5 kg
- Rack mountable, rack mount kit included
- Intel Xeon server class CPU
- 160 GByte hard disk drive (for OS and accounting data), 2nd disk drive for RAID-1 (optional)
- DVD-ROM (for software updates)
- Power supply: 100/240 VAC, 50/60 Hz, 315 W
- Operational temperature: 10 - 35 °C
- Operation humidity: 20 - 90 %, non-condensing
- CE label

Interfaces

Monitoring Only

- 2 x PS/2 for keyboard/mouse
- 4 x USB, e.g. for keyboard/mouse
- 1 x VGA

Input/Output

- 2 x LAN: auto switching 10/100/1'000 Base-T Ethernet interface, RJ-45
- 1 x additional LAN (optional)

Configuration/Monitoring

- SSH Access
- Web based GUI for real-time monitoring
- Logging with automatic log rotation
- Supports e-mail based error notifications

Control Interfaces

- Interface to EL840 PEP-Box® Server for back-pressing TCP streams and classification of encrypted traffic
- Interface to Elevation family modulators for back-pressing data to prevent queue overflows
- Interface to Elevation family modulators for DVB-S2 modulation/coding selection
- Interface to Elevation family modulators for Base-Band Frame encapsulation
- Interface to Elevation family demodulators for obtaining Noise and Distortion measurement (NoDE) results

Functionalities

Accounting

- Accounting of outgoing traffic
- Granularity down to on a per-rule basis
- Supports accounting per user, groups of users and groups of user groups
- Accounting information: bytes transmitted (CIR, MIR), bytes dropped, packets transmitted, packets dropped, min/max/average queue time, etc.
- Output available as comma separated value (CSV) files
- Automated accounting file rotation

Traffic Policing

- Real-time adaptable traffic policy changes without service interruption and without packet dropping
- Three-tier rule support, e.g. users, groups of users and groups of user groups
- Supports Peak Information Rate (PIR) policies
- Supports Committed Information Rate (CIR) policies
- Bandwidth is distributed equally or according to a configured weighting factor
- Shaping IPv4 unicast and multicast traffic
- Up to ten configurable traffic priority classes
- Supports IP ToS (Type of Service) transparency and IP ToS injection
- Classification and shaping of accelerated and encrypted ETCP traffic, e.g. when using an EL840 PEP-Box® Server for traffic acceleration, compression and encryption

Traffic Classification

- Source and/or destination IP address, IP address range or IP subnet
- Protocol type (TCP, UDP, ICMP, RTP, ESP, AH, GRE, ETCP)
- Source/destination port or port range (TCP or UDP)
- IPv4 ToS values

DVB-S2 IP Encapsulation

- Based on DVB-S2 Base-Band Frame encapsulation
- Supported encapsulation protocols: MPE, ULE and XPE
- Supports all 28 modulation codes (from QPSK to 32 APSK) defined in ETSI EN 302 307
- Supports DVB-S2 CCM, VCM and ACM modes
- Supported roll-off factors: 0.2, 0.25, 0.35
- Supports pilots on and off
- Supports short and long frames vices

Ordering Information

EL860 CCM/VCM/ACM SHAPER AND ENCAPSULATOR		Order n°
Default configuration		
Traffic shaping and prioritization, congestion avoidance and bandwidth controle support for EL840 and dynamic IP encapsulation for EL170, EL178, EL470 and EL478. 19" 1 U rack mount hardware platform. 5 Mbit/s, 150 shaping rules, CCM only*		EL860
Configuration options		
Category		Max. 1 option per category
Performance*	5 Mbit/s 150 shaping rules CCM only*	Default
	5 Mbit/s 150 shaping rules CCM/VCM*	TA-83
	5 Mbit/s 150 shap. rules CCM/VCM/ACM*	TA-41
	10 Mbit/s 300 shaping rules CCM only*	TA-84
	10 Mbit/s 300 shaping rules CCM/VCM*	TA-85
	10 Mbit/s 300 shap. rules CCM/VCM/ACM*	TA-42
	20 Mbit/s 600 shaping rules CCM only*	TA-86
	20 Mbit/s 600 shaping rules CCM/VCM*	TA-87
	20 Mbit/s 600 shap. rules CCM/VCM/ACM*	TA-43
	40 Mbit/s 1'200 shap. rules CCM only*	TA-88
	40 Mbit/s 1'200 shaping rules CCM/VCM*	TA-89
	40 Mbit/s 1'200 shap. rules CCM/VCM/ACM*	TA-44
	80 Mbit/s 2'400 shap. rules CCM only*	TA-90
	80 Mbit/s 2'400 shaping rules, CCM/VCM*	TA-91
	80 Mbit/s 2'400 shap. rules CCM/VCM/ACM*	TA-45
	120 Mbit/s 3'600 shap. rules CCM only*	TA-92
120 Mbit/s 3'600 shap. rules CCM/VCM*	TA-93	
120 Mbit/s 3'600 shap.rules CCM/VCM/ACM*	TA-46	
160 Mbit/s 4'800 shap. rules CCM only*	TA-94	
160 Mbit/s 4'800 shap. rules CCM/VCM	TA-95	
160 Mbit/s 4'800 shap. rules CCM/VCM/ACM	TA-47	
Additional options		
Category		Max. 1 option per category
LAN Extension	One add. Gigabit Ethernet Interf., RJ-45	AP-01
RAID-1 Redundancy	Harddisk Redundancy (HDD + RAID contr.)	AS-01
Services		
Category		
Assistance	Care Pack Basic	GA-06
	Care Pack Extended	GA-07

*Upgradable via license key

Other configurations and options are available on request. Contact your sales representative for details (sales@newtec.eu).

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