



**Overview**

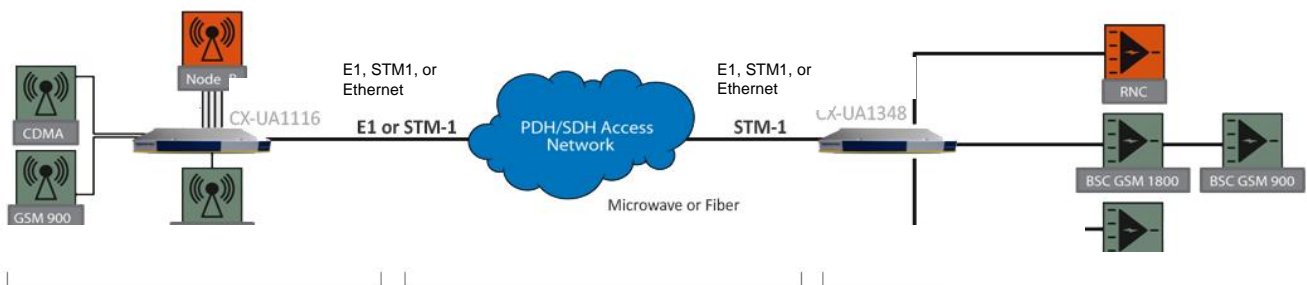
The CX-UA Series brings together a flexible access device for cellular backhaul traffic optimization, offering a variety of backhaul interfaces and transmission options. The CX-UA offers 2G (Abis/Ater) optimization, 3G (ATM) lub optimization, 3G (IP) trunking, 2G/3G aggregation, TDM/HDLC/ATM Pseudowire, all over IP, or TDM bearers or combinations of TDM and Ethernet bearers (Virtual bonded links). The CX-UA also supports 3GPP compliant timing schemes via integral GPS modules, SyncE, and IEEE1588v2 (slave and/ or grandmaster support).

The CX-UA series support high density T1/E1 concentrations with options for 24 and 48 T1/E1 ports and/or STM1 connectivity all in compact 1U chassis. Additionally, support for 8 electrical and 2 optical Gigabit Ethernet interfaces provide connectivity options for latest interfaces in the mobile environment. Designed with the utmost reliability in mind, CX-UA supports an extended temperature range and 1:1 hot standby redundancy options.

At a time when mobile operators are struggling to deliver more bandwidth across their networks, the time is ripe for the optimizing and multiplexing of all the different service offerings (2G, 3G, Wifi, etc) into a more efficient backhaul circuit. The freed up capacity provides immediate access to liberated bandwidth.

Typical Users
<ul style="list-style-type: none"> <li>• Telecom Operators</li> <li>• Mobile Operators</li> <li>• Satellite Service Providers</li> </ul>
Common Applications
<ul style="list-style-type: none"> <li>• Cellular Backhaul</li> <li>• Mobile Cellular Tower Applications</li> <li>• Universal Service Obligations Enabler</li> </ul>

**3G Aggregation and Abis Payload Optimization**



The CX-UA platforms are comprised of 2 products groupings:

**Access and Aggregation Gateway:**

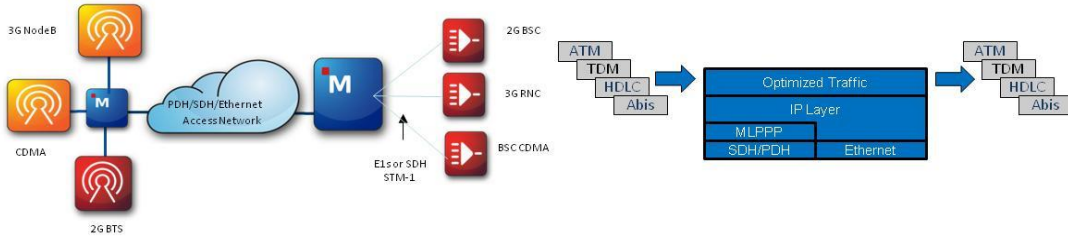
- **CX-UA 1124** (supports 16:8 or 24:Ethernet optimizations )
- **CX-UA 1248** (supports 32:16 or 32:Ethernet optimizations) \*\*STM1 connectivity option

**Central Site concentrators**

- **CX-UA 1348 and 1300**, support up to 64 T1/E1 and/or IP/Ethernet WAN aggregation allowing STM1 optimization and support).

## RAN Optimization

The RAN Optimizer transparently connects between the BTS/BSC and/or RNC/NodeB and/or transmission network facility, reducing the amount of backhaul bandwidth required to support cellular services over constrained links, such as satellite, limited leased line capacity or congested microwave links. Memotec's GSM 2G traffic optimization algorithms, 3G (ATM) lu optimization coupled with multi-site and IP/Ethernet aggregation (statistical multiplexing) of multiple streams has consistently provided up to 3:1 bandwidth reduction.



### RAN Optimizer Benefits:

- Reduced OPEX / Minimal CAPEX
  - Increases backhaul capacity
  - Reduces transmission capacity requirement in proportion to the effective traffic usage
  - High density solution (16E1 to STM1 in 1U chassis)
  - Rapid ROI—often in only a few months
- Significant Bandwidth Savings
  - 2G Abis/Ater traffic: Minimum 50% bandwidth savings
  - 3G lu traffic: optimization and stat muxing benefits
  - Cell site aggregation with statistical multiplexing benefits
- Sustained Service Quality
  - Hardware based with 10msec end-to-end processing delay.
  - Preserves voice quality and service integrity
  - Simple and reliable fail-safe operation
  - Compatible with major GSM BTS/BSC vendors.
  - Unaltered Signalling and codec independent
  - Transparent to Billing and other functionalities/VAS
  - Lawful Interception Compatible
  - 10 years of successful customer deployments

### RAN Optimizer Features:

- Transparent GSM FR, EFR, HR and AMR codec recognition and optimization
- Supports any data services (GPRS, EDGE, V.110 Fax/Modem)
- IDLE and silence suppression
- HDLC signaling frame extraction and forwarding
- EDGE traffic compression
- Signaling/voice/data traffic prioritization
- Transparent support of CDMA-IS95 traffic
- 3G and CDMA-1X traffic optimization (ATM IDLE cells removal, Cell packing, ATM header and payload compression)
- ATM and TDM Pseudowire over IP
- SS7 traffic forwarding and optimization (Ater links)
- End-to-end Abis link continuity check
- Dynamic Abis map interface auto-configuration
- Traffic prioritization and 3 level QoS
- TRX channels usage real-time monitoring
- Support for pt-to-pt and pt-to-mpt topology
- Configuration changes are dynamic and non-entusive

## Element Management & Performance Monitoring

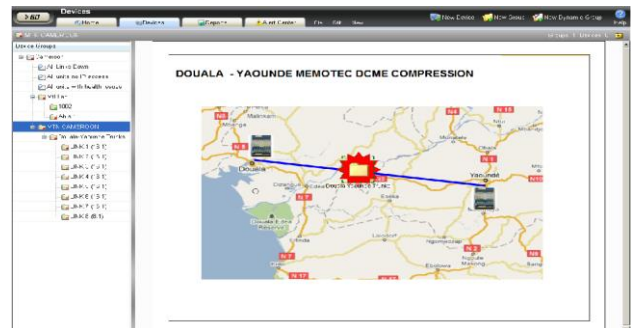
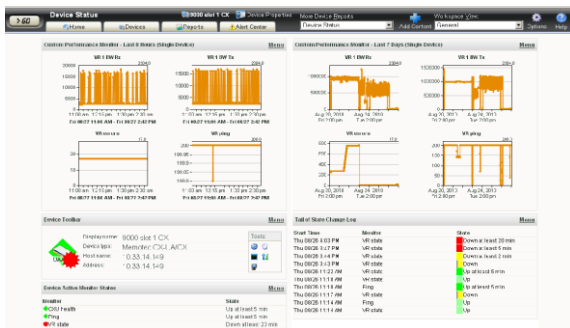
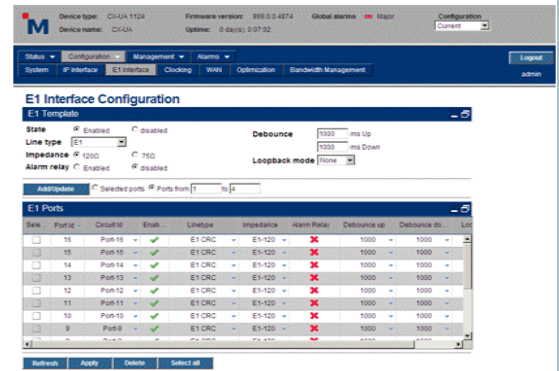
CX-UA offers a graphic user interface (GUI) network element configuration and Network Monitoring Solution (CXWUG) tools.

### Graphical User Interface (GUI)

- Integral GUI is an intuitive and user friendly configuration tool and accompaniment to standard Command Line Interface (CLI). It allows for complete network configurations to be developed quickly and easily.
- The multi-panel displays all the protocols and features via a single window panel. The guided configuration leads the user through a series of steps viewing only the appropriate ranges of values and prompting to related parameters. High level application templates streamline the configuration process by requiring only key elements to be entered for complex applications such as GSM Abis backhaul or DCME.

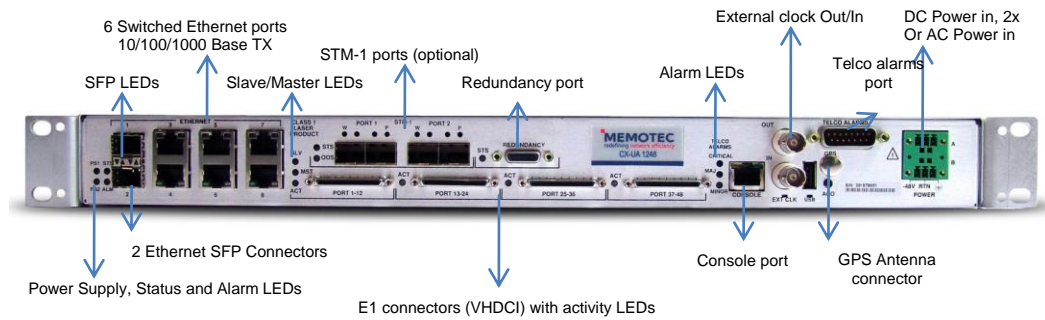
### Performance Monitoring (CXWUG and CXUAMON)

- CXWUG provides a high level interface for monitoring and troubleshooting. It monitors, records, and displays the necessary Key Performance Indicators (KPI) information for each application (Abis/Ater RAN Optimization, DCME voice compression).
- CXWUG provides the key information to effectively monitor, manage and optimize your network of Memotec CX-UA optimization devices in a clear and concise real-time graphical display.
- CXMON is Memotec's real time monitor utility which allows real time viewing of channels and statistics on any interface (E1s/VC12s) of a particular CX-UA unit.



## Specifications

### Interfaces



- Digital E1: unframed, fractional, channelized, voice, data, TDM
- E1 line type : CEPT (PRI), G.703/G.704 with or without CRC4 & MF\
- E1 encoding: HDB3, AMI, NRZ, NRZi, 120 Ohms
- NFAS, AIS and RDI bits/alarm relay
- T1/E1 alarms: red, yellow, near/far end LOS, AIS, LOF, LOMF, test, loop
- STM-1 – SDH channelized VC12 interface (63 VC12s), with APS 1+1 protection, SFP connector
- Ethernet: 10/100/1000 Mbps, RJ-45 (electrical and optical)
- RS-232 serial craft interface

### Standards

- T1/E1 Interface: ITU-T G.703, G.704, G.706, G.732, G.733, G.823, G.824
- Echo: ITU-T G.168
- DCME: ITU-T G.768
- Voice: ITU-T G.711, G.723.1, AMR
- IP Interworking: ITU-T G.799.1/Y.1451.1, Y.1452, Y.1453
- Fax and Modem Transparent Relay and compression
- Ethernet interface: IEEE 802.1, 802.3, 802.3u

### Capacity

	CX-UA 1124	CX-UA 1248	CX-UA 1300	CX-UA 1348
<b>T1/E1</b>	24	48	0	48
<b>WAN Bearer</b>	8	16	32E1/3VC3/STM1	
<b>Abis/Ater Optimized</b>	24	32	32 base (max 96*)	
<b>TDM/ATM Pseudowire</b>	24	32	64	
<b>Ethernet</b>	8	8	8	
<b>STM1 support</b>		optional	Yes	
<b>Optional 32/64 E1 processors</b>		Yes	Yes	

\*requires optional 32E1 or 64E1 CXpress module

\*\* does not support IEEE1588v2

### Synchronization

- ETSI PDH ITU-T G.823/G.824 and ETSI SDH SEC / ITU-T G.823 clock synchronisation compliant
- 8 KHz, 1.544 MHz, 2.048 MHz, 10 MHz (BITS) and 1544 Kbps or 2048 Kbps G.703 clock reference output (BNC 75 Ohm)
- Better than Stratum 3 TCXO local clock reference (250 ppb 24 hours holdover over temperature range)
- Optional internal GPS clock reference
- User defined synchronization priority scheme
- SyncE
- IEEE1588v2 Grandmaster Clock – support 32 devices with IPv4 Unicast (16fps)
- IEEE1588v2 Slave – accepts IEEE1588v2 polls and provides clock to attached T1/E1s

### Physical

- Dimensions: Standard 19" rack 1RU high chassis (height x width x depth) 1.70" x 16.5" x 12.1"
- Weight chassis: 2.2 kg (5.5 lbs)
- Input power: DC -40 to -60 ( 90-264 VAC power and/or redundant DC power available on option)
- Consumption: <40 W depending on model and configuration
- MTBF > 20 Years

### Environmental

- Operating temp: 0° to 50° Celsius
- Storage temp: -40° to +80° Celsius
- Operating humidity: 0 to 95% non-condensing
- Altitude: 4000 m

### Approvals

- Safety: CSA/UL 60950-1, IEC/EN 60950-1
- EMC-Emission Class A: FCC Part 15, ICES-003, EN 55022:2010
- EMC – Immunity : EN 55024:2010



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