Overview

Reliable and fast communication is vital for continuous operation of power delivery systems and mission-critical operational services.

For many years now, telecommunication networks have been undergoing significant changes. Increased bandwidth requirements and a large variety of services to be transported have led to much more versatile but also complex access and transmission equipment, adapted for the next generation of networks.

Gridcom DXC/eDXC/DXC-S is more than a conventional access and transmission platform, and is based on a modular and evolutive configuration platform.

The range of Gridcom DXC/eDXC interfaces cover all needs from conventional (FXO, FXS, 2/4W E&M, RS232, V.35, V.36, X.21, RS485, 64 k G.703) to more sophisticated configurations oriented toward new data network architectures such as Ethernet, IP and MPLS-TP.

Gridcom DXC/eDXC also includes a standard C37.94 interface to interconnect protection and teleprotection devices through optical fibre, G.703 Co-directional and 1/0 dry contact alarms.
Fulfilling Utility Requirements

GE offers a new generation of robust and reliable access and transmission multiplexers:
- Access cross-connect Gridcom DXC (PDH)
- Enhanced Digital cross-connect Gridcom eDXC (PDH/SDH)
- Transport cross-connect Gridcom DXC-S (SDH)

The Gridcom DXC/eDXC offers generic slots capable of supporting such interfaces as E1/T1, Ethernet 10/100Mb compatible with IEC 61850, xDSL, G.703, ISDN, RS232, V35, X21, 2/4W E&M, FXO, FXS, Terminal Server, C37.94, as well as short- and long-haul optical interfaces. All vital parts, such as the power supply and the processing board can also be 1+1 protected.

The Gridcom eDXC/DXC-5 provides enhanced capacities on transmission STM-1/4/16, MPLS-TP, Gigabit Ethernet connectivity and e-terragridcom eDXC supports all PDH boards available on e-terragridcom DXC equipment.

Reliability/ Availability

By concept and design, Gridcom DXC/eDXC/DXC-5 is a cost effective solution to match a high level of availability and harsh environmental constraints.

In addition, it offers a modular approach in terms of protection mechanisms like controller redundancy, shared power supply units as well as 1+1 protection for the 2Mbit/s and optical interfaces, providing a suitable solution to critical applications.

Powerful Management System

- Different management solutions are available, answering to different network complexities and customer maintenance organizations for remote configuration and management:
  - AEM: Element Management Layer, this solution responds to a centralized monitoring of equipment with Graphical User Interface (GUI).
  - INMS: Network Management Layer is the right solution to fully operate a complex network. In addition to all conventional features usually proposed for the backbone level (Security, graphical user interface, statistics, etc), INMS includes versatile tools for automatic path creation and configuration of equipment simply by a simple “mouse click.”
- High-availability schemes are available for both AEM and INMS.
- All equipment are SNMP native and offer direct compatibility with the GE telecom management system Sentinel.
Gridcom DXC | Access and Transmission Multiplexer

**Interfaces (DXC/eDXC)**

**El (2Mbps) Interface Boards**
- **G703/G704:**
  - Line rate: 2.048 Mbps +/- 50 ppm
  - Line code: AMI or HDB3
  - Line impedance: 75/120 Ohms
  - Number of ports:
    - Single El board (1/2 slot - DXC only)
    - Quad El board (1 slot)
    - Small Quad El board (1/2 slot - DXC only)
  - Equipment protection: 1+1 EPS
  - Line protection:

**G.SHDSL**
- Type of board: Single slot
- Number of ports: 2 or 4
- Line code: 16-TCPAM, full duplex with adaptive echo cancellation
- Line rate G.shdsl: n * 64 kbps (n <= 32)

**Optical Line Interface Boards**
- Type of board: 1/2 slot (DXC only)
- Line rate: 4*2 Mbps
- Attenuation range: 1310 nm o to 19 dB or 29 dB
- Attenuation range: 1550 nm O to 17 dB or 32 dB

**TDMoLP Interface Board**
- Type of board: 1 slot
- Number of ports: 2*10/100/1000 Base T (RJ45)
- 2*combo Gbe/SFP
- Processing: TDMoLP, SATop, CESoPSN
- L2 Switch Protocol: RSTP, VLAN, QoS, QinQ
- Protection: Link aggregation

**Others Aggregate Interfaces**
- TI (1.5 Mbps) board

**Voice User Interface**

**Analog 2/4 Wire E/M Interface Board**
- Type of board: Single slot
- Number of circuit 8
- Encoding A-law or m-law,
- Impedance Balanced 600 or 900W,
- Longitudinal rejection 55 dB
- Loss adjustment -21 to +10 dB / 0.1 dB step
- Signal/Distorsion > 46 dB with 1024 Hz, 0 dBm input
- Frequency response ITU-T G.712

**Analog FXS Interface Board**
- Type of board: Single slot
- Number of circuit 12
- Encoding A-law or m-law,
- Impedance Balanced 600 or 900W
- Tx/Rx level adjustment -21 to +10 dB / 0.1 dB step
- Frequency response ITU-T G.712
- Loop resistance Min. 300W, Max. 1800W
- Ringing Frequency 16.5 Hz, 20 Hz, 25 Hz or 50 Hz (selectable)
- Voltage 38 VRms, 64 VRms, or 85 VRms (selectable)

**Analog FXO Interface Board**
- Type of board: Single slot
- Number of circuit 12
- Encoding A-law or m-law,
- Impedance Balanced 600 or 900W
- Tx/Rx level adjustment -21 to +10 dB / 0.1 dB step
- Frequency response ITU-T G.712

**Others Voice Interfaces**
- Voice conference card

**Data Interfaces**

**Analog 2/4 Wire E/M Interface Board**
- Type of board: Single slot
- Number of circuit 8
- Encoding A-law or m-law,
- Impedance Balanced 600 or 900W
- Tx/Rx level adjustment -21 to +10 dB / 0.1 dB step
- Frequency response ITU-T G.712

**Analog FXS Interface Board**
- Type of board: Single slot
- Number of circuit 12
- Encoding A-law or m-law,
- Impedance Balanced 600 or 900W
- Tx/Rx level adjustment -21 to +10 dB / 0.1 dB step
- Frequency response ITU-T G.712

**Analog FXO Interface Board**
- Type of board: Single slot
- Number of circuit 12
- Encoding A-law or m-law,
- Impedance Balanced 600 or 900W
- Tx/Rx level adjustment -21 to +10 dB / 0.1 dB step
- Frequency response ITU-T G.712

**Others Voice Interfaces**
- Voice conference card

**Data Interface at 64 k (G.703)**
- Type of board: Single slot
- Number of circuit 8
- Data rate 64 kbps (co-directional)

**Router Boards**
- Physical interface: 10/100 BaseT
- Routing protocol: Static, RIP-I/II, OSPF
- Date rate: N*64Kup to Tl/El capacity.
- Supported protocol: TCP/IP, (ML)PPP, HDLC, Frame Relay
- Modularity: 2 or 8 (1/2 or single slot)

**Terminal Server**
- Layer 2 protocol: PPP, SLIP, Raw data
- Routing protocol: RIP 1/11, Static

**Others Aggregate Interfaces**
- TI (1.5 Mbps) board

**Access cross-connect multiplexer**

**Combo PDH/SDH multiplexer**

**SDH transmission multiplexer**
Digital Energy
Gridcom DXC
Access and Transmission Multiplexer

Optical (C 37.94) Subsystems
- Type of board: Single Slot
- Number of interfaces: 1 or 4
- Optical Signal: 820 nm
- Line Rate: n*64 kbps (n=1 to 12)

Dry Contact
- Input: 8
- Output: 8

Others Data Interfaces
- ATM/Frame Relay
- Point-to-Multipoint for RS232
- RS422/RS485

PTN Interface Boards
- 8*GbE (RJ45)
- 3*10G (SFP)

Ethernet Boards (EoS)
- Physical interface: 8 FE and 1 GE
- With or without L2 switch
- L2 protocol: RSTP, VLAN
- Processing: VCAT, GFP, LAPS, and LCAS
- Equipment protection: 1+1 EPS

Others Data Interfaces
- E3 interfaces

Operating Condition
- Power Supply:
  - DC module: -40/-150 Vdc (DXC only) -36 V/-72 Vdc
  - (eDXC/DXC-S) Coexistent module (DXC-S) 90 to 240 Vac, 50/60 Hz, -48 Vdc (-36 to -72 Vdc)
- Operating temperature: -50°C to 55°C (DXC) 0°C to 50°C (eDXC/DXC-S)
- Humidity: 0% to 95% at 23°C (non-condensing)
- Storage temperature: -25°C to +55°C

Mechanical Characteristics
- DXC
  - Dimensions: 435 x 225.5 x 220 mm (WxHxD)
  - Mounting: 19” rack mountable - 6U height
- eDXC / DXC-S
  - Dimensions: 433 x 264 x 223.5 mm (WxHxD)
  - Mounting: 19” rack mountable - 6U height

Power Utility Standards Compliance
- IEC TS 61000-6-5 compliant (DXC): “Immunity for power station and substation environments”
- IEC 61850-3 / IEEE 1613

World Class Expertise
- Gridcom DXC/eDXC/DXC-S brings an outstanding level of reliability and quality of service to access and transmission networks, ensuring fast, simple, and reliable installation and configuration.

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