DXC-8R/10A/30/30E

Multiservice Access Node

FEATURES

- Digital cross-connection for up to 960 timeslots on copper, fiber or HDSL links
- Supports Fractional STM-1, E3, T3, E1, T1, n x 56/64, and ISDN services over copper (2/4-wire) and fiber media
- The modular DXC family includes the following chassis types:
  - DXC-8R with 4 I/O modules
  - DXC-10A with 5 I/O modules
  - DXC-30 with 15 I/O modules
  - DXC-30E with 15 6U-high I/O modules
- Optional redundancy in common logic and power supply
- 1:1 protective switching
- E1/T1 conversion supports A-law/μ-law and signaling conversion
- Transmission of T1 traffic over E1, complying with ITU-T G.802
- Traffic grooming into E3/T3 uplinks
- Broadcast support
- Inverse multiplexing module supports up to 8 E1/T1 trunks
- Controlled slip buffer for overflow/underflow
- TFTP support for common logic software upgrade
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- Separate dial-in/dial-out port
- Supports SNMP agent and standard management protocols: SLIP, PPP and RIP2
- Local loop access solution with LTU or CSU options for extended range, built-in fiber optic, or 2-wire/4-wire HDSL modems

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DESCRIPTION

- The DXC family of modular Multiservice Access Nodes provides non-blocking cross connection of up to 960 timeslots for up to 120 fractional E1/T1 ports. Plug-in interface modules provide n x 56/64 kbps, E1, T1, E3, T3 or Fractional STM-1 transmission over copper, fiber or HDSL. Also available is the DIM module which provides inverse multiplexing capabilities of up to 8 x E1 or 8 x T1.
- Typical applications for the DXC:
  - Providing local loop access solution, together with traffic grooming for re-directing voice and data to different trunks (see *Figure 1*)
  - Concentrating multiple fractional E1/T1 lines from a cellular base station (BTS) onto a full E1/T1 link to the mobile switch center (MSC) (see *Figure 2*)
  - Providing conversion/gateway between E1 and T1 networks for both data and voice (see *Figure 3*).
  - Providing inverse multiplexing of a single higher rate logical channel over up to 8 E1/T1 links (see *Figure 4*).
- In order to support the needs of different applications, the DXC family features four chassis variants:
  - DXC-8R (1U-high) chassis with 4 I/O module slots.
  - DXC-10A (1U-high) chassis with 5 I/O module slots
  - DXC-30 (3U-high) chassis with 15 I/O module slots
  - DXC-30E (6U-high) chassis with 15 6U-high I/O module slots

  All units can be mounted in 19" racks.

CROSS CONNECT

- DXC-30/30E supports up to 120 E1/Fractional E1, T1/Fractional T1, or up to 30 n x 56/64 kbps ports. DXC-10A supports up to 40 ports, while the smaller DXC-8R supports up to 32 ports. A user-defined connection table programs connection of any incoming 64 kbps timeslot to any outgoing 64 kbps timeslot. Support is provided for drop & insert and broadcast applications.
- Cross-connection of n x 56 kbps or n x 64 kbps channels is implemented by placing the data onto an E1 or T1 frame, using only the required number of timeslots. This provides Fractional CSU/DSU functionality.
- DXC modules support three types of redundancy:
  - Line (single-slot) redundancy (1:1) ensures protective switching within less than 50 msec, between ports on the same module.
  - Hardware (Y-cable) redundancy between modules protects the service from hardware failure. This type of redundancy is supported by the copper interface only.
  - Line and hardware (dual-slot) redundancy are ensured by installing two DE3/DT3 modules in a chassis (only one is active).

APPLICATION

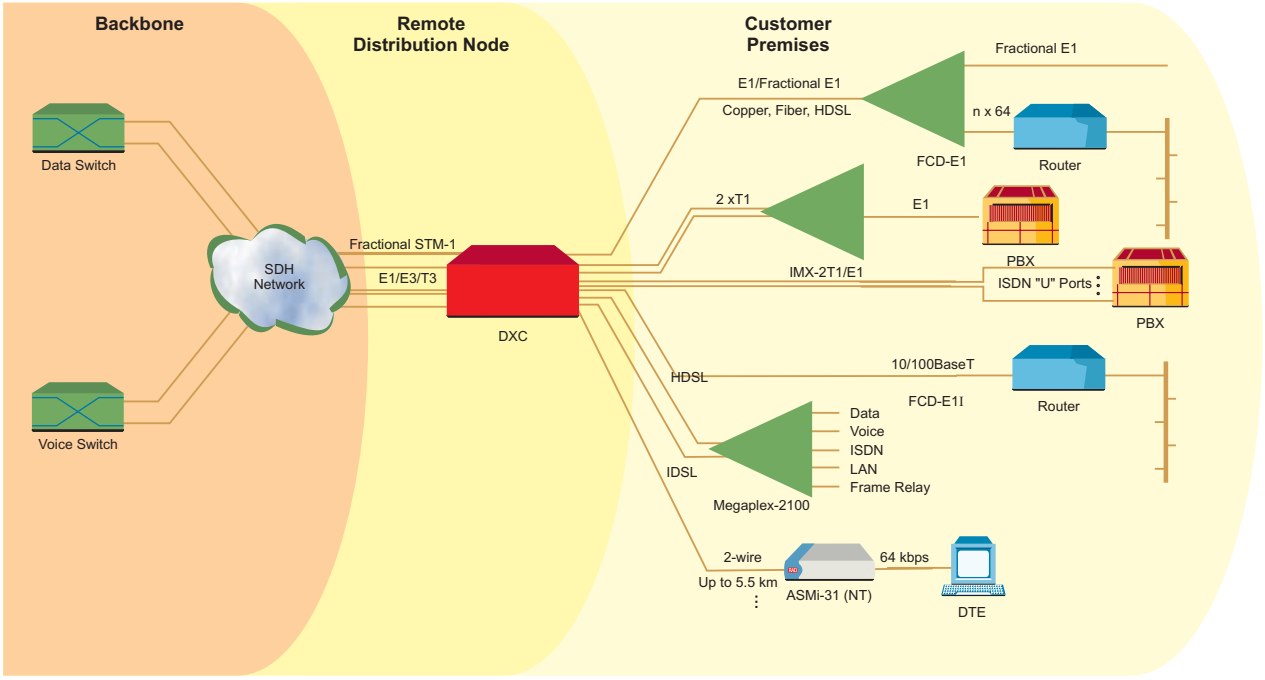

Figure 1. Multiservice Access Platform

Table 1. DXC I/O Modules

Module	Technology	Description
DE1	Copper/Fiber optic	Two-port E1 interface module
DE1B	Copper/Fiber optic	Two-port E1 interface module with BERT
DT1	Copper/Fiber optic	Two-port T1 interface module
DT1B	Copper/Fiber optic	Two-port T1 interface module with BERT
DE3	Copper/Fiber optic	One-port E3 interface module
DT3	Copper/Fiber optic	One-port T3 interface module
DT3/747	Copper/Fiber optic	One-port T3 interface module with G.747 submultiplexing (DCL.2 only)
DHS	Copper	Two-port n x 56/64 kbps data module
DIM	–	Digital inverse multiplexer module
DHL/E1	HDSL 4-wire	Two-port link 2.048 Mbps HDSL module, extended range
DHL/T1	HDSL 4-wire	Two-port link 1.544 Mbps HDSL module, extended range
DHL/E1/2W	HDSL 2-wire	Two-port link 2.048 Mbps 2-wire HDSL module, for up to 3.0 km
D4E1/D8E1	Copper	Four or eight-port E1 interface modules
D4T1/D8T1	Copper	Four or eight-port T1 interface modules
D8U/D16U	Copper	Eight or sixteen-port ISDN “U” interface modules
DFSTM-1	Copper/Fiber optic	Fractional STM-1 module (DCL.3 only)

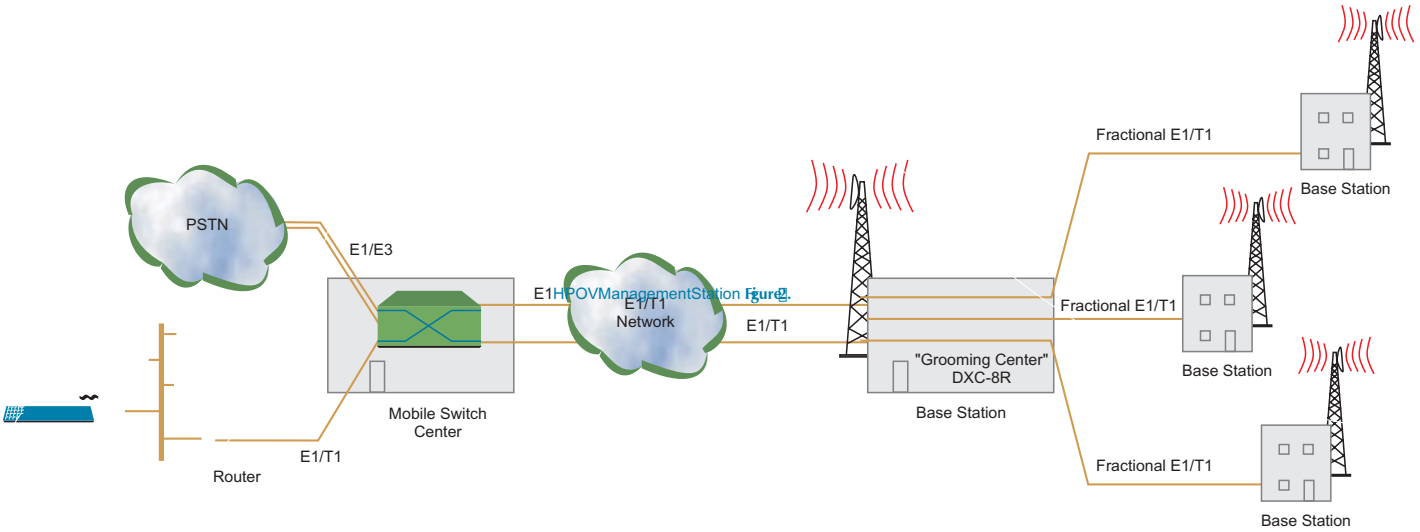

Figure 2. HPOVManagementStation

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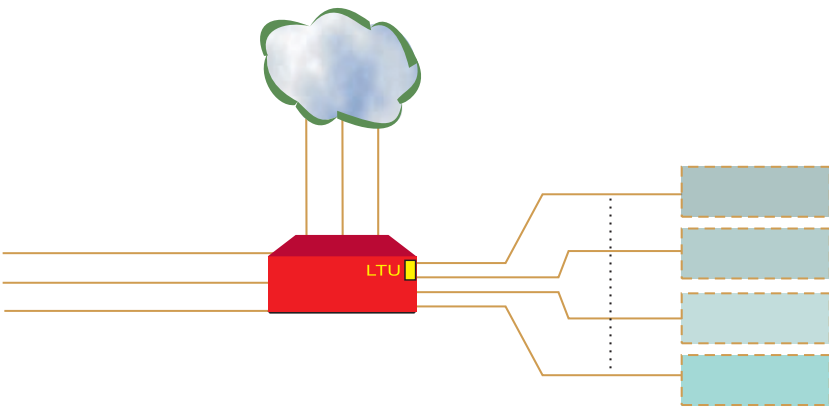

- **DHL/T1**, the two-port HDSL module, uses HDSL technology to extend the range of DXC up to 4.0 km (2.5 miles) over 24 AWG (0.5 mm), 4-wire copper cables. It works opposite other RAD products with HDSL technology.
- **D4E1** and **D8E1,** the 4- or 8-port E1 interface modules, provide 4 or 8 E1 links over copper cables, supporting E1 or Fractional E1 rates.
- **D4T1** and **D8T1,** the 4- or 8-port T1 interface modules, provide 4 or 8 T1 links over copper cables, supporting T1 or Fractional T1 rates.
- **D8U** and **D16U**, the 8 or 16-port ISDN "U" interface modules, provide independent ISDN "U" ports, each supporting 2B + D channels, for total payload data rate up to 128 kbps per port. D8U/D16U can be configured either to extend ISDN lines over non-ISDN facilities (/I mode), or as dedicated LTU (line termination unit) for the ASM-31 or ASMi-31 short-range modems.
- **DFSTM-1**, the fractional STM-1 module, provides direct access to the Synchronous Digital Hierarchy (SDH) transmission cores, at the STM-1 level (155.520 Mbps).

MANAGEMENT & DIAGNOSTICS

- Setup, control and diagnostics can be performed out-of-band via a V.24 supervisory port or optional Ethernet management port, using an ASCII terminal with SLIP or PPP protocols. A built-in SNMP agent enables remote management for configuration and diagnostics of remote devices (up to 30 remote locations) using TS 0, a dedicated timeslot on the E1/T1 trunk, or Telnet.
- DXC provides diagnostic loopback support for each E1/T1 or n x 56/64 kbps module. DE1B/DT1B modules support loopbacks per timeslot including an internal BERT and loopbacks toward the local or remote DTE. DT1B modules also support PLB or LLB code injection per ANSI T1.403.

  Any port can be configured to test and monitor data on any given port of the enclosure.
- Enhanced statistics include T1 ESF diagnostics according to ANSI T1.403 and AT&T 54016 (Local Support); E1 CRC-4 diagnostics per ITU-T Rec. G.706 are performed in a manner similar to AT&T Pub. 54016.
- A separate dial-in/dial-out port supports remote configuration (dial-in) and automatic alarm indication (dial-out). For dial-out operation, an external modem is activated to automatically dial a pre-programmed number whenever an alarm event occurs.
- Multiple DXC hubs can be managed by either a UNIX-based (RADview-HPOV/TDM) or PC-based (RADview-PC/TDM) user-friendly SNMP management system. In addition, configuration and monitoring is provided via Telnet or a dumb terminal.
- Network management provides centralized control of all network nodes, including interface configuration, connection setup, alarm and management. Alarm status and system configurations are available at all times.
- Programming and setup of a remote DXC is done either:
  - Via TS 0
  - Through the supervisory port of the remote unit, over a modem link, or over a FRAD
  - Over a full inband dedicated timeslot, supporting FR, PPP and RIP2 standard protocols.

SPECIFICATIONS

- **Timeslots Mapping**
  Any timeslot to any timeslot, with/without A-law/μ-law and/or signaling conversion per timeslot
- **Unused Timeslot Code**
  Any user defined code
- **Timing**
  System clock source:
  Internal clock (±32 ppm)
  External clock (G.703, RS-422)
  Receive clock (from any port)
- **Station Clock Interface**
  Data rate:
  1.544/2.048 Mbps (selectable)
  Compliance: ITU-T Rec. G.703 or V.11/RS-422
  Connectors:
  RJ-45, balanced;
  BNC coaxial, unbalanced
- **Elastic Buffer**
  Buffer length: ±1 E1/T1 frame
  Underflow: 1 frame repeated
  Overflow: 1 frame skipped
  (No frame sync loss for buffer overflow or underflow)
  Data delay: up to 375 μsec
  Signaling buffer: ±1 E1/T1 multiframe

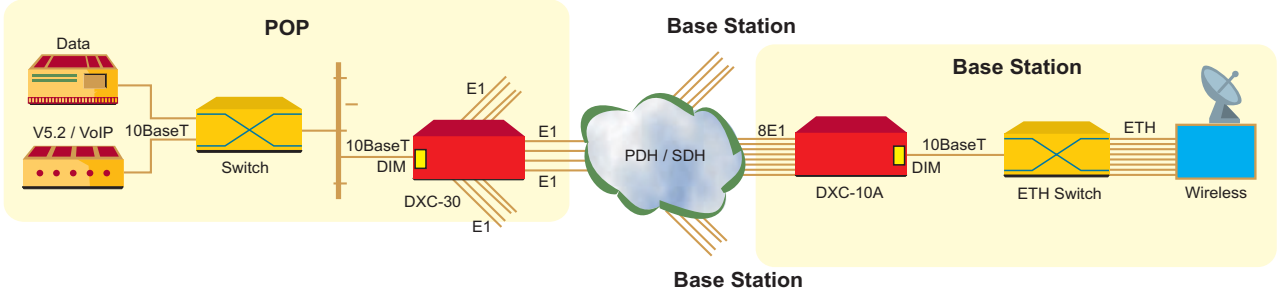

Figure 4. Inverse Multiplexing Application

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Specifications are subject to change without prior notice.