The DXC family of modular multiservice access nodes provides non-blocking cross-connection of up to 960 timeslots, over up to 120 ports.

Plug-in interface modules enable n x 56/64 kbps, E1, T1, E3, T3, or STM-1 transmission over copper, fiber, xDSL, or SHDSL lines. A DIM module that provides inverse multiplexing capabilities of up to 15.7 Mbps is also available.
To meet the needs of different applications, the DXC family has three 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.

All units can be mounted in 19-inch racks.

Typical applications for the DXC include:

- Local loop access with traffic grooming for redirecting voice and data to different trunks (see Figure 1)
- Voice and data transmission over PDH wireless devices (see Figure 2)
- Concentrating multiple fractional E1/T1 lines from a cellular base transceiver station (BTS) onto a full E1/T1 link to the mobile switch center (MSC) (see Figure 3)
- Inverse multiplexing a single higher-rate logical channel over as many as 8 E1/T1 links (see Figure 4).

**CROSS-CONNECT**

DXC-30 provides non-blocking DS0 cross-connect for up to 120 lines, DXC-10A supports up to 40 lines, and the smaller DXC-8R supports up to 32 lines. A user-programmable connection matrix routes any incoming 56/64-kbps timeslot to any outgoing 56/64-kbps timeslot. The system also enables drop-and-insert and broadcast applications.

To cross-connect \(n \times 56\) kbps or \(n \times 64\) kbps channels, the data is placed onto E1 or T1 frames using only the required number of timeslots. This provides fractional CSU/DSU functionality.

**E1/T1 CONVERTER**

DXC can function as a converter between 16 E1 ports and 16 T1 ports.

A-law/\(\mu\)-law and signaling conversion are performed according to the E1 and T1 standards.

**BASIC UNITS**

The basic DXC-30 unit includes one power supply, one common logic module, and fifteen I/O slots for the plug-in interface modules. Optional redundancy for the common logic and power supply is available.

The basic DXC-10A unit includes one power supply, one common logic module, and five I/O slots for the plug-in interface modules.

The basic DXC-8R unit includes two power supplies and two common logic modules for system redundancy. The DC power supplies are hot-swappable. DXC-8R has four I/O slots for plug-in interface modules.
COMMON LOGIC

The DCL.3 common logic module stores the matrix configuration and event information, as well as the configuration for alarm masking. It communicates with the management station using a SLIP/PPP/Ethernet connection (by means of an SNMP agent). DCL.3 can pass management information received from 30 different remote sites, over TS 0 or any dedicated timeslot, to the central management site. Telnet and ASCII terminal management, and Flash for software download, are also supported.

I/O MODULES

Note: Refer to Table 1, and see separate data sheets for detailed specifications.

DE1B is a two-port E1 module that supports both 2 and 16 frames per multiframe, TS 0 multiframe with CRC-4 and HDB3 line code, and unframed operation. For long-range applications, an LTU option is available. DE1B provides BERT, loopback per timeslot, and 1:1 redundancy. DE1B is available with either copper or fiber optic interfaces.

DT1B is a two-port T1 module that supports D4, ESF framing formats, or unframed operation. For long-range applications, a CSU option is available. DT1B provides BERT, loopback per timeslot, and 1:1 redundancy. DT1B is available with either copper or fiber optic interfaces.

D4SL and D8SL are four- and eight-port I/O modules that use SHDSL technology to extend the range of DXC up to 8 km (5 mi) on 24 AWG (0.5 mm) 2-wire copper cables. Combined with RAD’s ASMi-52 or any standard SHDSL CPE, they extend the range of the traditional subscriber loop while saving on copper infrastructure.

D4E1 and D8E1 are 4- and 8-port E1 modules that provide 4 or 8 E1 links over copper cables, with built-in LTU, and operate at E1 or fractional E1 rates.

D4T1 and D8T1 are 4- and 8-port T1 modules that provide 4 or 8 T1 links over copper cables, with built-in CSU, and support T1 or fractional T1 rates.

DHS is a two-port n × 56/64 kbps data module that provides two high-speed synchronous data channels. Each channel can be ordered independently with a V.35, V.11/RS-422, V.24, or X.21 interface. Ethernet 10/100 Mbps bridge and IP router versions are also available. Synchronous channels operate at data rates of n × 56/64 kbps (where n is 1 to 24 for T1, and 1 to 31 for E1).

D8HS is an 8-port n × 56/64 kbps data module that provides eight high-speed synchronous data channels. Each data channel operates at data rates of n × 56/64 kbps (where n = 1 to 24 for T1 and 1 to 32 for E1).

D8U is an 8-port ISDN “U” interface module that provides independent ISDN “U” ports, each supporting 2B + D channels, for a total payload data rate of up to 128 kbps per port. D8U can be configured either to extend ISDN lines over non-ISDN facilities, or as a dedicated LTU (line termination unit) for RAD’s ASMi-31 short-range modems.

<table>
<thead>
<tr>
<th>Module</th>
<th>Line</th>
<th>Number of Ports</th>
<th>Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>D4E1, D8E1</td>
<td>Copper</td>
<td>4/8</td>
<td>E1</td>
</tr>
<tr>
<td>D4SL, D8SL</td>
<td>Copper 2-wire</td>
<td>4/8</td>
<td>SHDSL</td>
</tr>
<tr>
<td>D4T1, D8T1</td>
<td>Copper</td>
<td>4/8</td>
<td>T1</td>
</tr>
<tr>
<td>D8HS</td>
<td>Copper</td>
<td>8</td>
<td>Serial</td>
</tr>
<tr>
<td>D8U</td>
<td>Copper</td>
<td>8</td>
<td>ISDN “U”</td>
</tr>
<tr>
<td>DE1B</td>
<td>Copper/Fiber optic</td>
<td>2</td>
<td>E1</td>
</tr>
<tr>
<td>DE3</td>
<td>Copper/Fiber optic</td>
<td>1/2</td>
<td>E3</td>
</tr>
<tr>
<td>DFSTM-1</td>
<td>Copper/Fiber optic</td>
<td>1/2</td>
<td>STM-1</td>
</tr>
<tr>
<td>DHS</td>
<td>Copper</td>
<td>2</td>
<td>Serial</td>
</tr>
<tr>
<td>DIM</td>
<td>Copper</td>
<td>1</td>
<td>Serial/Ethernet/E1</td>
</tr>
<tr>
<td>DT1B</td>
<td>Copper/Fiber optic</td>
<td>2</td>
<td>T1</td>
</tr>
<tr>
<td>DT3</td>
<td>Copper/Fiber optic</td>
<td>1</td>
<td>T3</td>
</tr>
</tbody>
</table>

Table 1. DXC I/O Modules

Order from: Cutter Networks  Ph: 727-398-5252 / Fax: 727-397-9610  www.bestdatasource.com
MANAGEMENT

Status and diagnostic information is defined, configured, and monitored over an Ethernet management port, using an ASCII terminal with SLIP or PPP protocols. A built-in SNMP agent enables configuration and diagnostics of remote devices (up to 30 remote locations) using TS 0, a dedicated timeslot on the E1/T1 trunk, or Telnet.

A separate dial-in/dial-out port enables 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.

The network management system provides centralized control of all network nodes, including interface configuration, connection setup, and alarm management. Alarm status and system configurations are available at all times.

Multiple DXC hubs can be managed with RAD’s UNIX-based SNMP management systems, RADview-EMS/TDM, RADview-PC/TDM and RADview-HPOV/TDM.

A remote DXC can be programmed and setup in two either of two ways:
- Out-of-band: via the Ethernet management port, the supervisory port of the remote unit, a modem link, or a FRAD
- Inband: via either a TS 0/F-bit or a dedicated timeslot using FR, PPP and RIP2 standard protocols.
DIAGNOSTICS
DXC provides diagnostic loopbacks for each E1/T1 or n × 56/64 kbps module. E1 and T1 modules perform loopbacks per timeslot, including an internal BERT, and loopbacks toward the local or remote DTE. T1 modules also perform 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 chassis.
Enhanced statistics capabilities include T1 ESF diagnostics according to ANSI T1.403 and RFC 3895; E1 CRC-4 diagnostics per ITU-T Rec. G.706; T3 diagnostics per RFC 3896, ANSI T1 107/107a; E3 diagnostics per RFC 3896, and STM-1 diagnostics per RFC 2258.

TIMING
System timing options include internal clock, external station (master) clock, and loopback timing from any selected external port.

REDUNDANCY
System hardware redundancy is possible by means of an optional redundant power supply and common logic (all chassis versions except DXC-10A).

DXC I/O modules have three types of redundancy:
- Line redundancy (single-slot, 1:1) ensures protective switching between ports on the same module in less than 50 msec.
- Hardware (Y-cable) redundancy between modules protects the service from hardware failure. Only copper interfaces offer this type of redundancy.
- E3/T3 line and dual-slot hardware redundancy is achieved by installing two DE3/DT3 modules in a chassis with only one module being active.

Figure 3. Bandwidth Optimization in a GSM Network Using DXC-8R/10A/30

Figure 4. Inverse Multiplexing
## Specifications

### Timeslot 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.

### 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

### Diagnostics
- Local loopbacks on all external and internal ports (except VC-4)
- Remote loopbacks on all external and internal ports (except VC-4, VC-12)
- Code activated network loopbacks per ANSI T1.403 on T1 interface modules
- Loopback for any timeslot per ANSI T1.403 RDL on E1 and T1 interface modules
- Built-in BERT on all external E1, T1, DHS, and DIM ports
- Alarm mask (user-defined)

### Statistics
- **E1 CRC-4:**
  - Per ITU-T Rec. G.706; RFC 3895, 3896
  - Local support equivalent to AT&T 54016
- **T1, ESF:**
  - Full support according to ANSI T1.403
  - Local support according to AT&T 54016 and RFC 3895
  - Transparent FDL between ports
- **E3:** RFC 3896
- **T3:** RFC 3896, ANSI T1 107, ANSI T1 107a
- **STM-1:** RFC 2258

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![Figure 5. Example of Rear Panel in RADview-EMS](image-url)
Data Sheet

Management Port
Ethernet: 10/100BaseT

Indicators
Front panel: Major alarm, minor alarm, test, on-line (per power supply), on-line (per common logic)
Rear panel: module indicators (see separate data sheets)

Power Supply
100–240 VAC, 47 to 63 Hz
– 48 VDC nominal

Power Consumption (max)
DXC-8R: 72W (DC), 60W (AC)
DXC-10A: 75W (DC), 60W (AC)
DXC-30: 120W (DC), 250W (DC), 120W (AC)

Physical
DXC-30:
Height: 13.2 cm (5.25 in (3U))
Width: 43.8 cm (17 in)
Depth: 25.4 cm (10 in)
Weight: Less than 8 kg (17 lb)

DXC-10A and DXC-8R:
Height: 4.4 cm (1.75 in (1U))
Width: 44.0 cm (17.3 in)
Depth: 25.4 cm (10 in)
Weight: Less than 2.5 kg (5.5 lb)

Note: All weights are given for fully equipped chassis.

Temperature
DXC-8R, 10A: 0° to 50°C (32° to 122°F)
DXC-30: 0° to 45°C (32° to 113°F)

Note: For extended temperature ranges, contact your local RAD partner.

Humidity
Up to 90%, non-condensing

Table 2. DXC Family Comparison

<table>
<thead>
<tr>
<th>Feature</th>
<th>DXC-8R</th>
<th>DXC-10A</th>
<th>DXC-30</th>
<th>DXC-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>1U</td>
<td>1U</td>
<td>3U</td>
<td>6U per nest</td>
</tr>
<tr>
<td>Maximum number of ports</td>
<td>32</td>
<td>40</td>
<td>120/*</td>
<td>688 (8 nests)</td>
</tr>
<tr>
<td>Number of I/O slots</td>
<td>4</td>
<td>5</td>
<td>15</td>
<td>86 (8 nests)</td>
</tr>
<tr>
<td>System redundancy</td>
<td>Built-in</td>
<td>None</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>E1, T1, E3, T3, STM-1 modules</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>XDSL, inverse multiplexing modules</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>–</td>
</tr>
<tr>
<td>n x 56/64 kbps modules</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Router, OC-3 modules</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>✔</td>
</tr>
<tr>
<td>ASCII, SNMP, RADview management</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

* Maximum of 240 ports with the ISDN option only.

Order from: Cutter Networks
Ph: 727-398-5252 / Fax: 727-397-9610
www.bestdatasource.com
**DXC-8R/10A/30**

*Multiservice Access Nodes*

**Ordering**

Basic units, additional system modules, and I/O modules are ordered separately. When ordering I/O modules, refer to the module data sheets.

**BASIC UNITS**

**DXC-30-3/UTP/*/~**

3U-high chassis with 15 I/O slots, one power supply, and one common logic module. Management via Ethernet 10/100BaseT port.

**DXC-10A-3/UTP/~**

1U-high chassis with 5 I/O slots, one power supply, and common logic module. Management via Ethernet 10/100BaseT port.

**DXC-8R-3/UTP/~**

1U-high chassis with 4 I/O slots, two power supplies, and two common logic modules. Management via Ethernet 10/100BaseT port.

**SYSTEM MODULES**

**DXC-30M-CL.3/UTP**


**DXC-30M-PS/~-**

Power supply module for DXC-30

**DXC-8RM-PS/48**

DC power supply module for DXC-8R

**Legend**

* Redundancy:
  *R* Power supply and common logic redundancy

~ Power supply:

<table>
<thead>
<tr>
<th>AC</th>
<th>DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 to 240 VAC</td>
<td>48 VDC</td>
</tr>
</tbody>
</table>

48HP DXC-30 high-power chassis only (this unit requires a fan tray)

**SUPPLIED ACCESSORIES**

Mounting kits are supplied according to the device ordered.

**RM-DXC8R**

19-inch rack mount kit for DXC-8R

**RM-DXC10A**

19-inch rack mount kit for DXC-10A

**RM-DXC30**

19-inch rack mount kit for DXC-30

AC power cord (supplied when AC power supply is ordered)

DC adapter plug (supplied when DC power supply is ordered)

**OPTIONAL ACCESSORIES**

**CBL-DB9F-DB9M-STR**

Control cable

**DXC-30M-FT/#**

Fan tray for DXC-30

**Legend**

# Power supply for fan tray:

<table>
<thead>
<tr>
<th>AC</th>
<th>DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 to 240 VAC</td>
<td>48 VDC</td>
</tr>
</tbody>
</table>