

DXC Module

DFSTM-1

STM-1 Multiplexer Module



- Daisy-chain configuration of multiple DXCs
- E1/T1 conversion
- Grooming of T1/FT1, E1/FE1, IDSL/ISDN, SHDSL, $n \times 56/64$ kbps data, and inverse multiplexing traffic
- Traffic capacity of up to 61.44 Mbps

DFSTM-1 is an STM-1 multiplexer module with a capacity of 61.44 Mbps (30 E1 data streams) for the DXC-8R, DXC-10A and DXC-30 Multiservice Access Nodes.

DFSTM-1 modules are available with two port configurations:

- Single-port module
- Dual-port module for redundancy or daisy chain applications.

The secondary port can be ordered with the same interface as the primary port, or a different one, either in media (copper or fiber) or interface type.

The DFSTM-1 module provides direct access to the STM-n SDH ADMs, at the STM-1 level (155.520 Mbps). It operates opposite another DXC or any other standard STM-1 equipment.

When operating as a fractional SDH Terminal Multiplexer (TM) in a DXC chassis, DFSTM-1 can multiplex traffic from up to 30 E1 data streams into a single STM-1 data stream. The module routes any E1 data stream to any of the 63 TU-12 tributary units carried in the STM-1 VC-4 virtual container.

As a TM, DFSTM-1 grooms and multiplexes T1/FT1, E1/FE1, IDSL/ISDN, SHDSL, $n \times 56/64$ kbps data, as well as $n \times$ E1/T1 data (where $n = 1$ to 8) in conjunction with the DIM inverse multiplexer module (see *Figure 1*).

DFSTM-1 can distribute up to 960 timeslots from up to 30 VC-12 containers of the full STM-1 link and distribute them among the various other installed modules. These can include any E1, T1, ISDN/IDSL, SHDSL $n \times 56/64$ kbps data, or a DXC inverse multiplexer module.

STM-1 multiplexer
for the DXC family
of modular
cross-connects



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STM-1 Multiplexer Module

When multiple units are connected in a drop-and-insert configuration, a full STM-1 stream ($63 \times E1$) can be distributed among an unlimited number of chassis (see *Figure 2*).

A DXC with the DFSTM-1 module can be also used as an E1/T1 converter (see *Figure 3*).

To support DFSTM-1 modules, the DXC chassis must include the Common Logic module DCL.3, running software version 7.00 or higher.

The STM-1 port can be ordered with one of the following interface types:

- Electrical intra-office copper interfaces, for direct connection to higher-level SDH multiplexers

- Optical interface, enabling remote access to regional and national SDH transmission networks.

The following fiber-optic STM-1 interface options are available:

- 1310 nm single mode with laser transmitter
- 1550 nm single mode with laser transmitter.

The DFSTM-1 module with two STM-1 ports can be configured for physical layer (line) redundancy. If the active STM-1 port or its link fails, the traffic is automatically switched (within less than 50 msec) to the other STM-1 port.

Setup, control, and diagnostics can be performed using an ASCII terminal connected to the supervisory port, or with the RADview SNMP element management system.

Diagnostic capabilities include self-diagnostics upon power-up, local and remote loopbacks, and performance monitoring of external and internal ports.

DFSTM-1 modules operating in a DXC-30 chassis require an external cooling unit. A fan tray is available for this purpose (see *Ordering*). The DXC-8R and DXC-10A chassis do not require additional cooling.

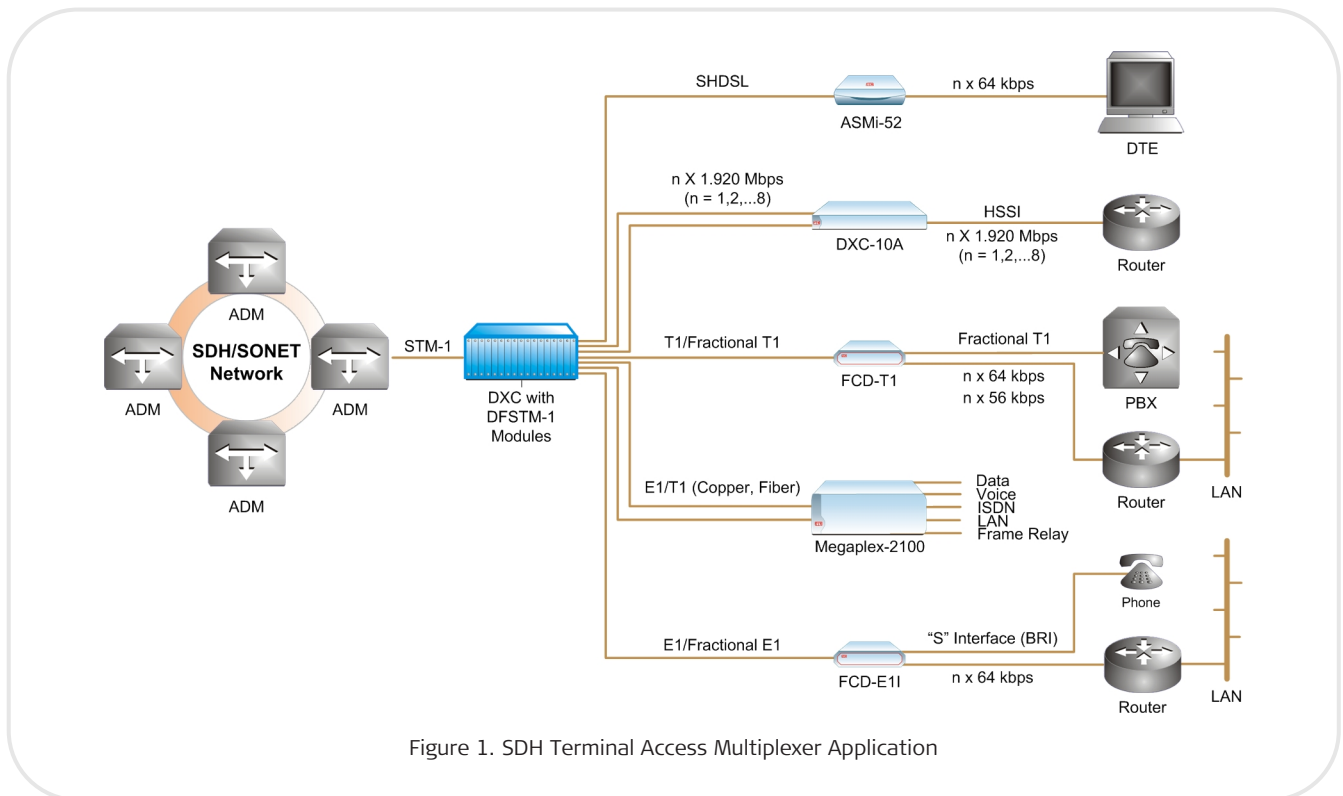


Figure 1. SDH Terminal Access Multiplexer Application

Specifications

ELECTRICAL STM-1 PORTS

Physical Layer

ITU-T Rec. G.703, Para. 12

Line Code

CMI

Bit Rate

155.520 Mbps, ±4.6 ppm

Timing

Internal timing (locked to the DXC master clock)

Loopback timing (transmit timing locked to the clock recovered from the received STM-1 signal)

Connectors (per Port)

Pair of BNC coaxial, unbalanced

FIBER OPTIC STM-1 PORTS

Physical Layer

ITU-T Rec. G.957

Line

Dual optical fiber cable

Bit Rate

155.520 Mbps, ±4.6 ppm

Timing

Internal timing (locked to the DXC master clock)

Loopback timing (transmit timing locked to the clock recovered from the received STM-1 signal)

Typical Transmit Power

Laser: -12 dBm

Operating Wavelength

1310 or 1550 nm

(see *Ordering*)

Range

20 km (12.4 miles)

Connectors (per Port)

Pair of ST, FC/PC, or SC (see *Ordering*)

INTERNAL E1 PORTS

Number of Ports

30 E1 ports

Compliance

ITU-T Rec. G.732, G.823 and

ITU-T Rec. G.704

Framing

G.732N

G.732S with or without CRC-4 protection

in accordance with ITU-T Rec. G.704

Unframed

Nominal Data Rate

2.048 Mbps

Timing

Locked to the DXC master clock

The DXC master clock can be locked to one of the recovered internal E1 port clock signals

GENERAL

External STM-1 Ports

DFSTM-1: one port

DFSTM-1/R: two ports

Indicators

L LOS – Local loss of STM-1 signal

R LOS – Remote loss of STM-1 signal

Diagnostics

User-activated STM-1 local and remote loopbacks

User-activated local and remote loopbacks on each internal E1 port

User-activated local loopbacks on each VC-12 port

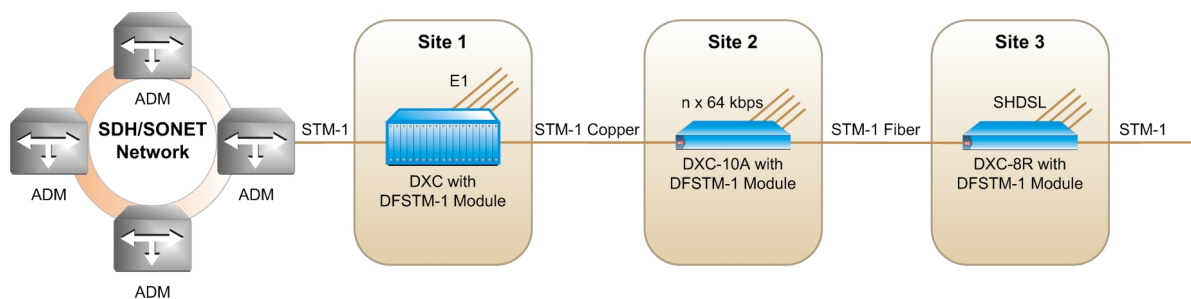


Figure 2. DFSTM-1 in Linear ADM (Daisy-Chain) Topology

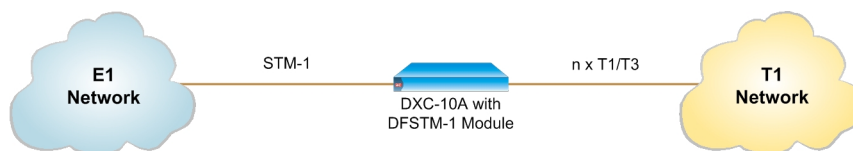


Figure 3. DXC/DFSTM-1 Converting between E1 and T1 Traffic

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Performance Monitoring

External, internal VC-12, VC-4 ports:

complies with RFC 2258

Internal E1 ports: complies with RFC 1406

Timeslot Allocation

User-defined mapping, any timeslot to any timeslot

Routing of E1 Ports to TU-12s

User-defined mapping, any E1 port to any TU-12

Power Consumption

20W

Configuration

Programmable via DXC management

Physical

Occupies a single slot in a DXC-8R, DXC-10A or DXC-30 chassis

For comparison of DXC chassis, see *Table 2*. For the list of DXC I/O modules, refer to the DXC-8R/10A/30 folder.

Ordering

DXC-M-FSTM1/#/+/*

Legend

Link connector type (default is electrical interface with coaxial BNC connectors):

ST ST type fiber connectors

FC FC/PC type fiber connectors

SC SC type fiber connectors

+ Optical interface wavelength and transmitter (not relevant with copper interface):

13L 1310 nm, single mode, laser

15L 1550 nm, single mode, laser

* Interface for a second port (default is one port):

R identical to the first port

R/CX coax interface

R/#/+ fiber-optic interface (see above)

OPTIONAL ACCESSORIES

DXC-30M-FT/~

Fan tray for the DXC-30 chassis

Legend

~ Fan tray power supply:

AC 100 to 240 VAC

48 -48 VDC

Table 2. DXC Chassis Comparison Table

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

*The DXC-8R/10A/30 modules and DXC-100 modules are not interchangeable.

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