Data Sheet

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 × 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, SHDSL, n × 56/64 kbps data, as well as n × E1/T1 data (where **n** is from 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, SHDSL n × 56/64 kbps data, or a DXC inverse multiplexer module.

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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 × 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.

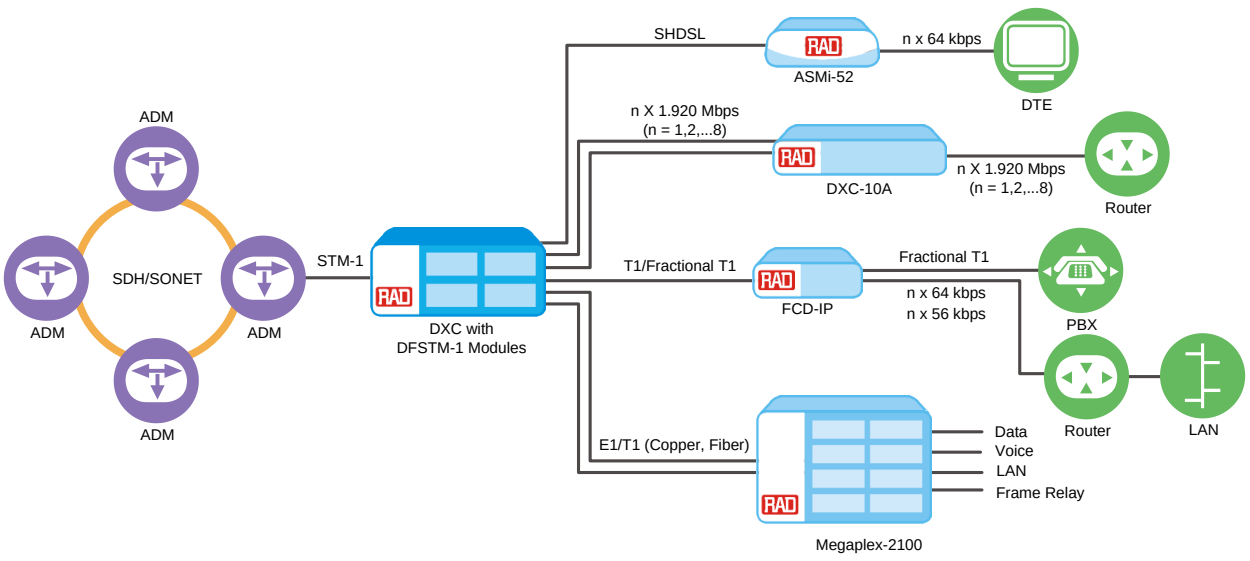

Figure 1. SDH Terminal Access Multiplexer Application

Specifications

CAPACITY

Number of STM-1 Ports
DFSTM-1: one port
DFSTM-1/R: two ports

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

ELECTRICAL STM-1 INTERFACES

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

Line Code
CMI

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
Pair of BNC coaxial, unbalanced

FIBER OPTIC STM-1 INTERFACES

Physical Layer
ITU-T Rec. G.957

Line Type
Dual optical fiber cable

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)

Transmit Power
Laser: –12 dBm

Operating Wavelength
1310 or 1550 nm
(see *Ordering*)

Range
20 km (12.4 miles)

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

INTERNAL E1 PORTS

Number of Ports
30

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

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

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

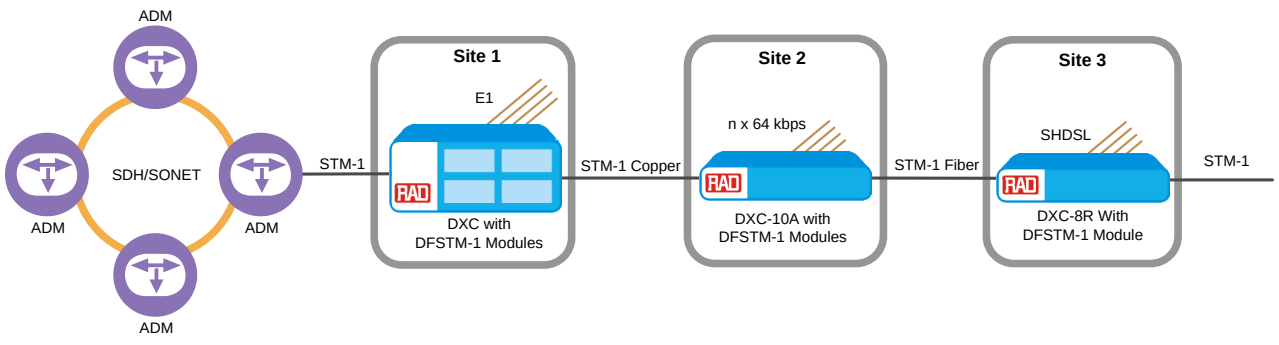

Figure 2. DFSTM-1 in Linear ADM (Daisy-Chain) Topology

DFSTM-1

STM-1 Multiplexer Module

PERFORMANCE MONITORING

External, internal VC-12, VC-4 ports: complies with RFC 2258
Internal E1 ports: complies with RFC 1406

GENERAL

Indicators
L LOS – Local loss of STM-1 signal
R LOS – Remote loss of STM-1 signal

Power Consumption
20W

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

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

***Note: 15L** interface is not available with SC connector*

***** 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)

***Note:** The product configuration **DXC-M-FSTM1/ST/15L/R/CX** is not available for ordering.*

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

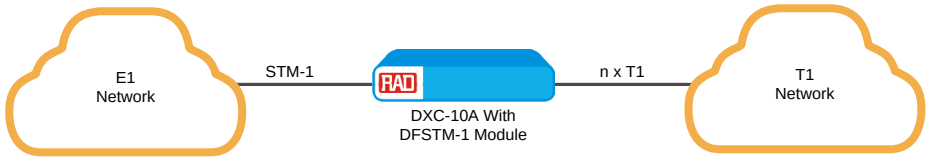

Figure 3. DFSTM-1 Converting between STM-1 stream and T1 Traffic

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