

# Traverse

## VT-HD Switch Module (40G)

### Key Features

#### Full-Featured DCS Design

- Integrates wideband/LO grooming and switching functions into the Traverse Multiservice Transport Switch
- Provides uni-directional, bi-directional, and multicast crossconnections at the VT1.5 level
- Supports standard DCS groom and fill, and bridge and roll functions, as well as integrated test access
- Transmultiplexing services are provided by the optional Traverse DS3/E3/EC-1 Transmux SIM

#### Scalable Switch-Fabric

- Provides 40 Gbps of wideband DCS capacity (21504 VT-1.5s), equivalent to 768 STS-1s per module
- Wideband DCS matrix supports in-service growth from 96 to 768 STS-1 equivalents of fully protected, non-blocking capacity

#### Applications and Configurations

- Supports 1:1 equipment protection
- Optimized for DCS, VT add-drop multiplexer and terminal mux applications in hub or end-office locations

#### Comprehensive Management

- TransNav Management System provides intuitive VT level cross-connect provisioning and connection management
- Supports performance management in specialized hardware as well as non-intrusive remote monitoring

The Traverse™ VT-HD Switch Module (40G) integrates wideband/LO grooming and switching functions into the Traverse Multiservice Transport Switch. The module provides uni-directional, bi-directional, and multicast crossconnections at the VT1.5 level. Traverse VT-HD module supports standard DCX/DCX groom, fill, bridge, roll functions, as well as integrated test access.

### Scalable Integrated Cross-Connect Solution

Digital Cross-Connects (DCSs) perform a critical bandwidth management function in carriers' SONET-based transport networks. These systems improve efficiency by switching and grooming traffic at DS1 granularity for hand-off to the IOF network, or for distribution back to the access network. However, with the continued growth in TDM private lines, as well as the use of low-order virtual concatenation to transport Ethernet services, scaling traditional DCSs (typically large, power hungry systems that are difficult to manage) becomes increasingly inefficient from both a capital and operational cost perspective.

The VT-HD switch module integrates wideband/low-order switching and grooming functions directly into the Traverse Multiservice Transport Switch to create a scalable and economical alternative to replacing or upgrading legacy cross-connect systems. A single Traverse VT-HD Switch Module provides 40 Gbps of VT1.5 cross-connection capacity (21504 VT1.5 terminations) in a single Traverse 2000 shelf. Two VT-HD Switch Modules can be installed for equipment protection in this 40 Gbps non-blocking wideband switching solution (768 protected STS-1 equivalents). This fully integrated DCS and SONET transport solution simplifies carriers' networks, while providing dramatic scalability and cost advantages over legacy DCS architectures.

### A Powerful and Economical DCS/DCX Solution

With the seamless integration of DCS capabilities via the VT-HD Switch Module, the Traverse Multiservice Transport Switch creates an advanced multi-layer bandwidth management system that supports true "any to any" cross-connection ability. This architecture, which combines SONET transport with service management capabilities at the wideband, broadband and Ethernet levels as well as high-density electrical and optical access, provides numerous benefits to carriers. In addition to consuming less power and rack space than legacy DCS systems, the Traverse platform is easier to install and maintain, further reducing costs.

When deployed as a distributed DCS solution, the Traverse platform minimizes backhaul bandwidth requirements and optimizes bandwidth efficiency at the network edge – improving carriers' ability to meet customer demands for both existing and emerging services. When deployed in central hub locations, the Traverse platform serves as a highly-scalable and economical alternative to replacing or upgrading legacy cross-connects. A single compact Traverse shelf supports 768 fully protected STS-1 equivalents. As a carrierclass system, the Traverse platform supports full equipment protection and is also compliant with applicable Telcordia GR-2996, GR-253 and TR-233 standards.

# Traverse VT-HD Switch Module (40G)

Model	Description
TRA-VT-HD	VT-HD Switching Module for the Traverse Platform

## Physical

### Traverse VT-HD Interface Module

#### Weight:

5.7 lbs.

#### Dimensions:

13.9 x 1.03 x 11 (inches)

## Environmental

#### Operating Temperature:

-5°C to +55°C

#### Operating Humidity:

To 90% max. non-condensing

#### Power Consumption:

120 Watts

## Functional

#### Switching Capacity

40.0 Gbps Non-blocking per module, or:  
768 STS-1 equivalents  
21504 x 21504 VT1.5s

#### Architecture

Non-blocking Time Division Switch

#### Equipment Protection

1:1

#### Modules Supported

- 1 per shelf without redundancy for 40 Gbps application
- 2 per shelf with redundancy for 40 Gbps application

#### Bandwidth Management

Any-port to any-port TSA/TSI, multicast, broadcast

#### Performance Management

Hardware signal threshold capability

## Status LEDs

#### Power LED

- Blinking Red — module initializing
- Green — module operating
- Red — module failed

#### Active/Standby

- Blinking green — module in standby mode
- Green — module active

- Blinking Amber — module in standby mode, synchronization with active module not complete
- Amber — module is placed in an invalid slot

## Industry Standards

#### ANSI

T1.105-1995

#### Telcordia/NEBS

GR-253-CORE, GR-2996 Section 5,  
TR-233 Section 4  
(where applicable)

## Regulatory and Standards Compliance

#### NEBs

- GR-63-CORE
- GR-1089-CORE

#### Safety

- UL 60950
- EN 60950
- CSA C2.22 No. 60950;
- IEC 60950
- CE-Mark

#### EMI

FCC Part 15, Class A

#### ETSI

ETS 300 019-1-3, 019-1-3  
(Environmental)