



CTDI Products: End-to-End Solutions

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Edge2000™

Providing seamless, reliable connectivity between the core network and optical access network, the **Edge2000** is CTDI's central office chassis. The Edge2000 delivers voice, video, and data services to your customers with the flexibility to support TDM or IP voice, RF or IP video, and ultra-high speed data. Built around a 16-gigabit switching fabric, the Edge2000 supports up to 16 Gigabit Ethernet PONs from a compact, high-density, NEBS compliant design. With a full compliment of testing and management capabilities, the Edge2000 provides unparalleled bandwidth, functionality, and reliability.

Features and Benefits

Carrier grade chassis and electronics

- Redundant, hot-swappable controllers, interface cards and powering
- 19" rack mounting with front accessed connectivity (suitable for ANSI or ETSI rack mounting)
- NEBS compliant with redundant -48VDC power
- External alarm (outputs and inputs) for integration to head-end monitoring systems
- Voice, video and data services integrated into one platform
- Business, home and high-density applications in one network

Secure, high capacity data services

- Internal 16Gbps aggregation switch allows all PONs to be supported on one network interface
- Optional network interfaces for up to 8Gbps network-facing data capacity
- Port aggregation and spanning-tree support for redundant data network access
- VLAN managed services with priority QoS processing
- Designated services support for guaranteed error free delivery of VoIP and streaming video content
- Universal PON bridging capabilities allows private LAN communications

Industry-standard TDM telephony

- Standard DS3 telephony interfaces for TDM/POTS connections
- Integrated 3-1-0 digital cross connect device
- Synchronous T1/E1 delivery
- Private T1/E1 point to point services

Universal video distribution

- RF Video support via optical overlay (HDTV supported)
- Remote RF video service controls
- IP video using IGMP multicast and proxy functionality (HDTV, MPEG2 and MPEG4 supported)
- VoD capability with 2-way signaling (HDTV supported)

Centralized configuration, testing, and management

- Built in web-based configuration manager
- SNMP network management interface
- Software download and distribution control
- Circuit testing and loop backs for telephony services
- Extensive data port statistics
- Remote RF alarms and controls





Edge2000™

Specifications

SHLF002

Physical

- 10U 19" rack mount
- Dimensions: 17.5" H x 17" W x 12" D
(44.45cm H x 43.18cm W x 30.48cm D)
- Weight: 30 pounds (13.6kg)
- Card slots
- 8 OLT slots (optional working/standby mode)
- 2 SCM slots (working/standby)
- 2 6Gb NIM slots (working/standby)
- 2 DS3M slots (working/standby)
- 1 DS3 interface slot

System Service Capacities

- 16 Gbps switching fabric
- 16 1Gbps Ethernet PONS
(32 ONUs each)
- 512 ONUs total
- 4,032 VLANs
- 5 designated high-priority service facilities
- 8 1000BaseFX network interfaces
(2 standard, 6 optional)
- 4 DS3 TDM interfaces ports (up to 2,688-static
DS0 cross connects)

System Timing

- Primary, secondary & tertiary system clock source
selections
- Internal (free-run)
- 2 external BITS clock inputs, at
1.544 Mbps or 2.048 Mbps
- DS3 clock (T1 or E1 derived clock timing)

Alarm and Indicators

- Critical, Major, Minor alarm LED
indicators on shelf and plug-in cards
- Audible alarm indicator relay contacts
- Visual alarm indicator relay contacts
- ACO & Lamp test push-button

Network Management

- Redundant 10/100BaseT Ethernet manage-
ment ports with configurable IP addresses
- In-band or out-of-band management access
- Web-enabled GUI based local
configuration
- SNMP remote management capabilities

Testing and Maintenance Capabilities

- OTDR automatically ranges the ONUs
- Variable TCAs for optical power on ONUs
- Packet analysis tools
- TDM performance monitoring
- Digital pattern validation for POTS and T1 chan-
nels
- Loopback controls on TDM ports

Power and Environmental

- Dual -48VDC power feeds
(-42 to -65VDC)
- 480W maximum power consumption
- 0°C to +50°C ambient air temperature
- 5% to 95% operating humidity
(non condensing)

Standards, Certifications, and Patents

- UL and CE mark
- NEBS
- UL 1950 3rd Edition, FCC Part 15, Class A, UL/
CSA 22.2 EOC
- ANSI T1.102, T1.107, T1.107A, T1.404, T1.231
- Telcordia TR-TSY-000009,
TR-NWT-000499,
- ITU G.703, G.704, G.706, G.747, G.775
- IEEE 802.3
- FCC part 15a
- EN300 386
- Patents
- United States (US Pat 7 031 343)
- Taiwan (#90128223)
- China (ZL01821736.2)

Description of Plug-in Cards for Edge2000

SCMA003

The SCMA003 is a system controller and network interface card. It contains 16 Gigabit layer 2 switching fabric and CPU control complex that manages all aspects of the CTDI Edge2000 system and attached ONUs. It provides network management and diagnostic ports, as well as 2 Gigabit SFP sockets for Ethernet payload to be connected to the CTDI access network.

Management interfaces

- RJ45 connector
- 10/100 Ethernet with automatic
negotiation
- SNMP v1 network management
- HTML based GUI for local provisioning
- Name/password security with access list and
closed user groups

Payload interfaces

- 2 1000BaseFX Ethernet SFP interface ports
- Port aggregation
- Spanning tree
- VLAN tagging
- Double-tagged packet support
- TOS and Ethernet priority support
- IP Video Multicast and Unicast support

OLTB002

The OLTB002 is a dual PON termination card that may be installed in slots 1–8 in the Edge2000 chassis. The OLT incorporates an Ethernet switching fabric, 2 PON optical interfaces and OAM management functionality.

Features

- 2 1 Gigabit PONS on each card
- OAM&P control
- Automatic ONU ranging
- PON to PON bridging
- Same PON bridging
- Alarm management and forwarding
- Alarm status indicators



Edge2000™

PON Interfaces

- 2 faceplate mounted SC/APC optical PHY (single-mode fiber)
- 1.25 Gigabit Ethernet PON
- Broadcast downstream @ 1Gbps
- Burst-mode TDM upstream @ 960Mbps

Downstream PON optics (transmitter)

- Class 1 laser
- Optical output power level: >+3dBm
- Laser wavelength: 1490nm +/-2nm

Upstream PON optics (receiver)

- Optical receive wavelength: 1310nm +/-50nm
- Optical receiver dynamic range: -8 to -29dBm

OLTC002

The OLTC002 is a dual PON termination card that may be installed in slots 1-8 in the Edge2000 chassis. It supports all of the functions of the OLTB002 and also includes an internal optical coupler that allows RF video to be injected onto the PON fiber. Two RF video inputs are provided (one for each PON) that allow the RF video power levels to be fine-tuned on a PON by PON basis for optimal performance.

Features

- 2 1-Gigabit PONS on each card
- OAM&P control
- Automatic ONU ranging
- PON to PON bridging
- Same PON bridging
- Alarm management and forwarding
- Alarm status indicators

PON Interfaces

- 2 faceplate mounted SC/APC optical PHY (single-mode fiber)
- 1.25 Gigabit Ethernet PON
- Broadcast downstream @ 1Gbps
- Burst-mode TDM upstream @ 960Mbps

Downstream PON optics (transmitter)

- Class 1 laser
- Optical output power level: >+2dBm
- Laser wavelength: 1490nm +/-2nm
- RF overlay wavelength: 1550nm +/-20nm

Upstream PON optics (receiver)

- Optical receive wavelength: 1310nm +/-50nm
- Optical receiver dynamic range: -7 to -28dBm

Ordering information

Part #	Description
SHLF002	Edge2000 chassis with fans, alarm and power conditioning unit.

Plug-in cards for Edge2000

Part #	Description
SCMA003	Universal system controller with 2 SFP sockets
OLTB002	Switching Optical Line Terminal 2 PONs 1490nm down, 1310nm up
OLTC002	Switching Optical Line Terminal 2 PONs 1490nm down, 1310nm up + 1550nm RF video
6PGEFX	Gigabit Ethernet NIM card with 6 SFP sockets
DS3M001	4 port DS3 MUX
BNC4001	4 port BNC card with BITS clock inputs

SCMA003: SFP Plug-ins

Part #	Description
OPT2100	1000BaseFX SFP module, multi-mode fiber, 850nm optics, 200meter range
OPT2200	1000BaseFX SFP module, single-mode fiber, 1310nm optics, 20kilometer range
OPT2300	1000BaseFX SFP module, single mode fiber, 1550nm optics, 70kilometer range
COP2000	1000BaseT SFP module, RJ45 connector, CAT 5 cable, 300 foot range

6PGEFX (NIM)

The 6PGEFX (NIM) card provides up to 6 Gigabit interfaces from the CTDI chassis to the core network to allow simple service connectivity and to support network capacities greater than the 2 Gigabit interfaces provided by the standard SCM ports. It provides 6 individually configurable ports using SFP interface modules (purchased separately) to allow a maximum flexibility for installation of each port. All ports support Link Aggregation and Spanning tree capabilities. A second 6PGEFX may be added for redundant, high reliability applications.

Features

- 6 1000BaseFX Ethernet, SFP interface ports
- Port aggregation
- Spanning tree support
- VLAN tagging
- Double-tagged packet support
- TOS and Ethernet priority support
- IP video Multicast and Unicast support



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DS3M001

The DS3M001 is a 3-1-0 cross connect switch that accepts standard DS3 TDM interfaces and allows an operator to connect T1/E1 or POTS traffic from the ONUs to the DS3 facility. This card also supports the TDM synchronization, diagnostics, and performance monitoring functionality for the system.

Features

- 4 ITU/ANSI standard DS3 interfaces
- T1 or E1 payloads
- Full 3-1-0 cross connect functionality
- Full grooming for up to 2688 DS0 cross connects
- T1 derived system timing
- Red/Yellow alarm processing
- Performance monitoring
- Alarm indicators

BNC4001

The BNC4001 card provides the physical interfaces for the DS3M cards and supports redundant BITS clock inputs. This unit is needed when the system is providing TDM services. It supports 4 DS3 interfaces with standard BNC coax connectors.

Features

- 4 DS3 interfaces (separate transmit and receive BNC connectors)
- 8 Service NIM Slot indicators
- 2 RJ48 BITS clock inputs (working and protect)



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PRODUCTS

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