

BTI SYSTEMS INC.

BTI-7000 SERIES
PRODUCT GUIDE

**SMARTER
FASTER +**

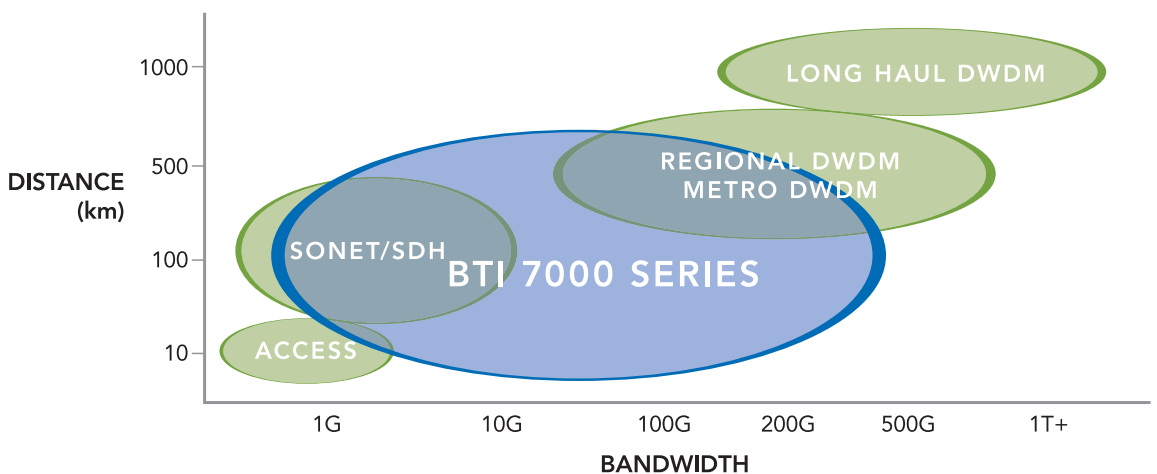
bti systems

SMARTER FASTER NETWORKING

+

THE BTI 7000 SERIES

SMARTER + FASTER NETWORKING—THE BTI 7000 SERIES ADDRESSES THE INCREASING DEMAND FOR ETHERNET SERVICES, GREATER TRANSPORT CAPACITY, DYNAMIC NETWORKING, AND MANAGEMENT SIMPLICITY IN CAMPUS, METROPOLITAN, AND REGIONAL NETWORKS. INTEGRATING BOTH ADVANCED CWDM, DWDM, AND ROADM WITH PACKET FUNCTIONALITY, THE BTI 7000 SERIES DELIVERS LEADING-EDGE, SCALABLE, AND FLEXIBLE NETWORKING IN A COMPACT, LOW POWER CONSUMPTION, PAY-AS-YOU-GROW PACKET OPTICAL SYSTEM.

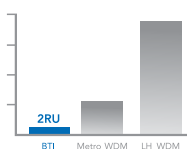


INTEGRATED PACKET AND OPTICAL SOLUTION

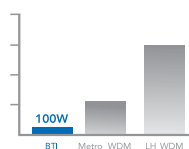
The BTI 7000 Series merges Ethernet and optical networking with a fully-featured WDM infrastructure, including performance monitoring and protection for carrier-grade service delivery. With a complete portfolio of client service modules, CWDM, DWDM, and ROADM networking capabilities, reach extension, and fiber adaptation for any application; the BTI 7000 Series delivers end-to-end network efficient multiprotocol gigabit services and high capacity for smarter and faster campus, metropolitan, and regional networks.

BTI BRINGS IT ALL TOGETHER

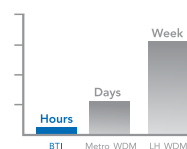
- **CONVERGED ETHERNET AND OPTICAL NETWORKING** – carrier-grade availability with 16 λ CWDM, 32 λ DWDM, ROADM or hybrid WDM options.
- **MULTIPROTOCOL SERVICES** – featuring a variety of transponder, muxponder, or integrated packet service (packetVX™) modules with built in WAN protection for high availability.
- **RAPID SERVICE PROVISIONING** with client service modules that can be remotely configured to address any service, protocol, or interface speed.
- **NETWORK INTEROPERABILITY** – integrating third party devices with SONET, SDH, and ITU G.709 OTN WDM wavelength encapsulation options.
- **COMPREHENSIVE PERFORMANCE MONITORING & NETWORK MANAGEMENT** with real time and historical monitoring of physical, L1, and L2 parameters and intelligent in-band management software with General Communications Channel (GCC) support.
- **FIBER NETWORKING** with single fiber bi-directional networking, 1310nm network integration, optical amplification, and dispersion compensation for reach extension.
- **ENVIRONMENTALLY FRIENDLY** – using state-of-the-art technology the BTI 7000 Series is engineered for very low power consumption reducing carbon footprint for central offices and data centers.



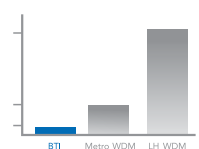
FOOTPRINT



POWER



COMMISSIONING TIME



FIRST-IN SERVICES COST

BTI 7000 SERIES PORTFOLIO

BTI'S PACKET OPTICAL NETWORKING SOLUTIONS ANSWER TODAY'S—AND TOMORROW'S—NETWORK NEEDS.

THE BTI 7000 SERIES IS COMPRISED OF THREE SHELF CONFIGURATIONS TO MEET DENSITY AND SCALABILITY REQUIREMENTS.



BTI 7060

BTI 7060 Flagship (2RU) service platform with six service slots to support up to 120Gbps of transport capacity. Expandable with the BTI 7060 expansion shelves, the system scales to 24 service slots and is managed as a single network element.



BTI 7030

BTI 7030 Ultra compact (1RU) service platform with two service slots to support smaller location service requirements and collocation deployments.



BTI 7020

BTI 7020 Ultra compact (1RU) rack mountable passive service platform with two service slots, supports all passive network building blocks.

BTI proNX™ MANAGEMENT SOFTWARE SUITE

BTI'S proNX™ MANAGEMENT SOFTWARE SUITE MAKES IT EASY TO PLAN AND MANAGE MULTISERVICE NETWORKS. THE proNX™ PORTFOLIO OFFERS A WIDE RANGE OF OPTIONS FOR MAXIMUM MANAGEMENT FLEXIBILITY.

- **proNX™ 900 Node Controller** is a powerful yet user friendly nodal craft GUI solution for local operation.
- **proNX™ 9000 Network Manager** provides network wide visibility with full FCAPS management feature set.
- **proNX™ 9010 Network Designer** delivers a smart link engineering engine to take the complexity out of optical network planning.

MODULES

BTI DELIVERS ONE OF THE MOST COMPREHENSIVE AND FLEXIBLE PORTFOLIOS IN THE INDUSTRY TODAY. CONFIGURE THE BTI 7000 SERIES FOR HIGH-BANDWIDTH SERVICE DELIVERY.

packetVX™ The packetVX™ modules provide Ethernet service switching and aggregation, sub-50ms protection switching, and hardware based video processing over 10G Ethernet rings. Combining packet functionality and virtual switch capabilities multiple packetVX™ modules can be managed and provisioned as a single virtual switch.

TRANSPONDERS The transponder portfolio provides connection and conversion of any optical interface (850nm, 1310nm, CWDM, DWDM) to any wavelength on the ITU wavelength grid (CWDM, DWDM). These modules offer optional line protection, SFP/XFP versatility, SONET/SDH/OTN network interoperability and extensive performance monitoring capabilities.

MUXPONDERS The muxponder portfolio provides sub-wavelength multiplexing of a wide range of protocols onto 10 Gbps or 2.5 Gbps wavelengths with SFP/XFP versatility. ADM functionality delivers distributed add/drop capabilities with sub-50ms UPSR/SNCP protection and OTN.

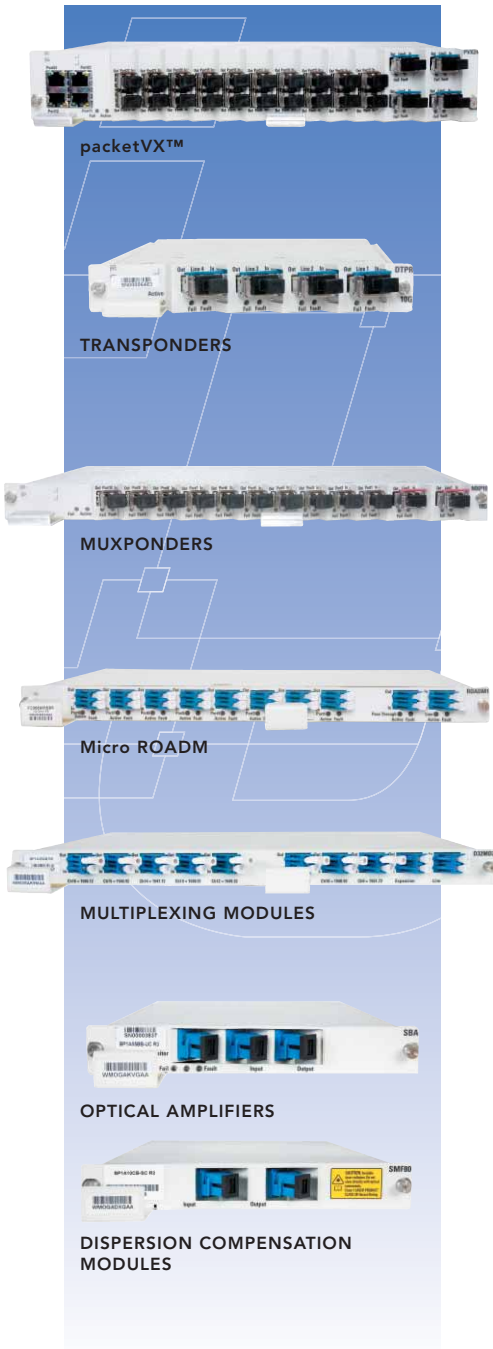
Micro ROADM This low power module delivers dramatic OPEX savings and fast service provisioning in an ultra-compact form factor. Multi-degree technology enables a wide range of optical agility applications.

MULTIPLEXING MODULES (WDM, MUX/DEMUX AND OADMS) BTI offers a complete suite of active and passive DWDM and CWDM mux/demux and optical add/drop modules to address site add/drop requirements.

OPTICAL AMPLIFIERS BTI supports a full portfolio of single channel, sub-band, and C-band DWDM amplifier modules including pre-, booster, line, and line amplifiers with mid-stage access.

DISPERSION COMPENSATION MODULES The dispersion compensation portfolio offers both Fiber Bragg Gratings (FBG) and Dispersion Compensating Fiber (DCF) technologies.

FIBER ADAPTATION BTI's fiber adaptation portfolio consists of a variety of coupler/splitters and bidirectional passives to optimize optical transport, leverage existing legacy services, and adapt the network for new services.



SOLUTIONS

BTI SYSTEMS IS REDEFINING HOW TO ADDRESS THE INCREASING DEMAND FOR MULTIPLE SERVICES, GREATER TRANSPORT CAPACITY, DYNAMIC NETWORKING, AND MANAGEMENT SIMPLICITY IN CAMPUS, METROPOLITAN, AND REGIONAL NETWORKS.

FASTER, SMARTER, MORE INTELLIGENT OPTICAL NETWORKING

- Expand network applicability for WDM with low power, easy-to-use platforms
- Integrate packet services functionality to efficiently converge network layers and reduce CAPEX and OPEX
- Provide CWDM / DWDM / ROADM flexibility plus extensive fiber adaptation options
- Harness the value of OTN for improved network performance and transparent networking
- Deliver SONET/SDH/OTN network functionality for WAN resiliency and interoperability
- Enable service-oriented networking with performance monitoring and protection for iron-clad SLAs
- Deliver multiple services, greater transport capacity and reach, dynamic networking, and management simplicity

FOR SERVICE PROVIDERS

CARRIERS—Deliver residential, business, and wholesale services with cost effective, small-form factor solutions to increase revenue, address demand uncertainty, maximize fiber infrastructure, and simplify operations.

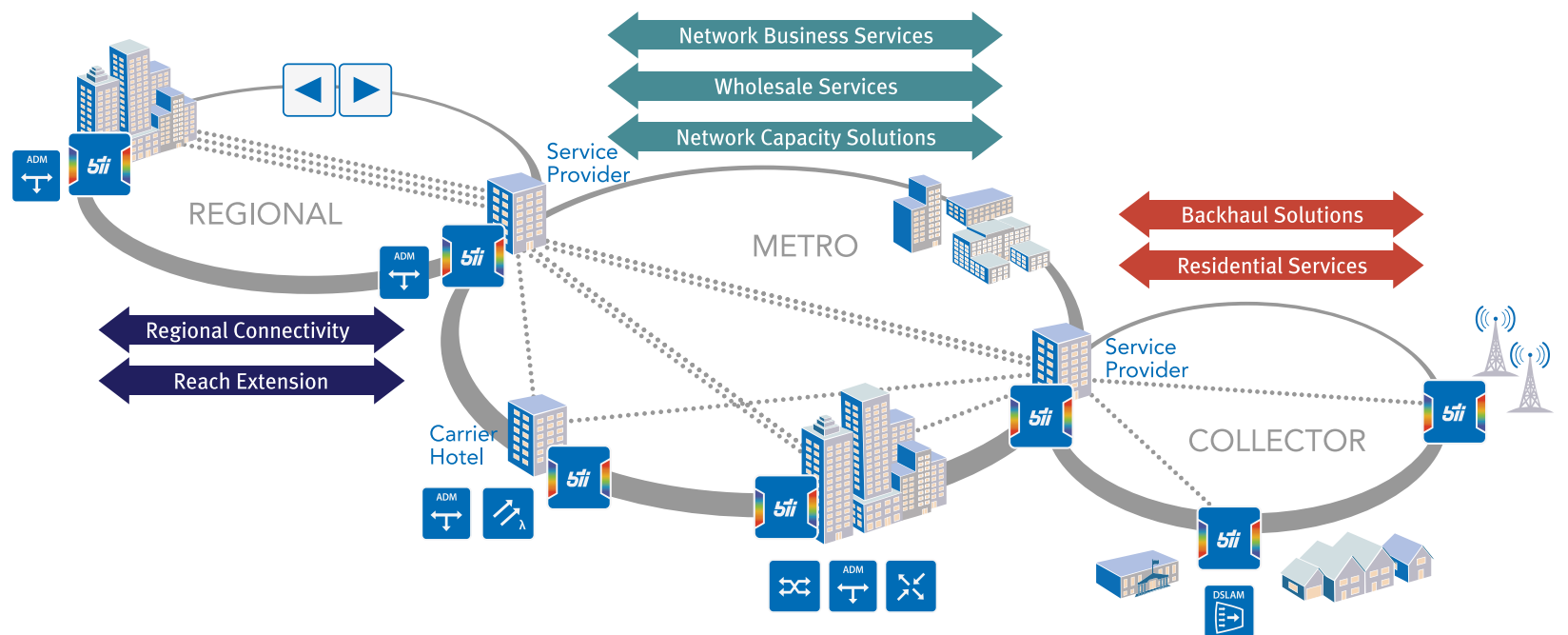
ALTERNATE CARRIERS AND IOCs—Expand your network capacity on a pay-as-you-grow basis and maximize your fiber infrastructure by overlaying microWDM™ for voice, data, and video services on the same fiber pair.

MSOs—Leverage high-capacity microWDM™ and packetVX™ solutions to deliver voice, internet, and video service bundles. Drive new revenue-generating business service offerings over a converged, resilient network infrastructure.

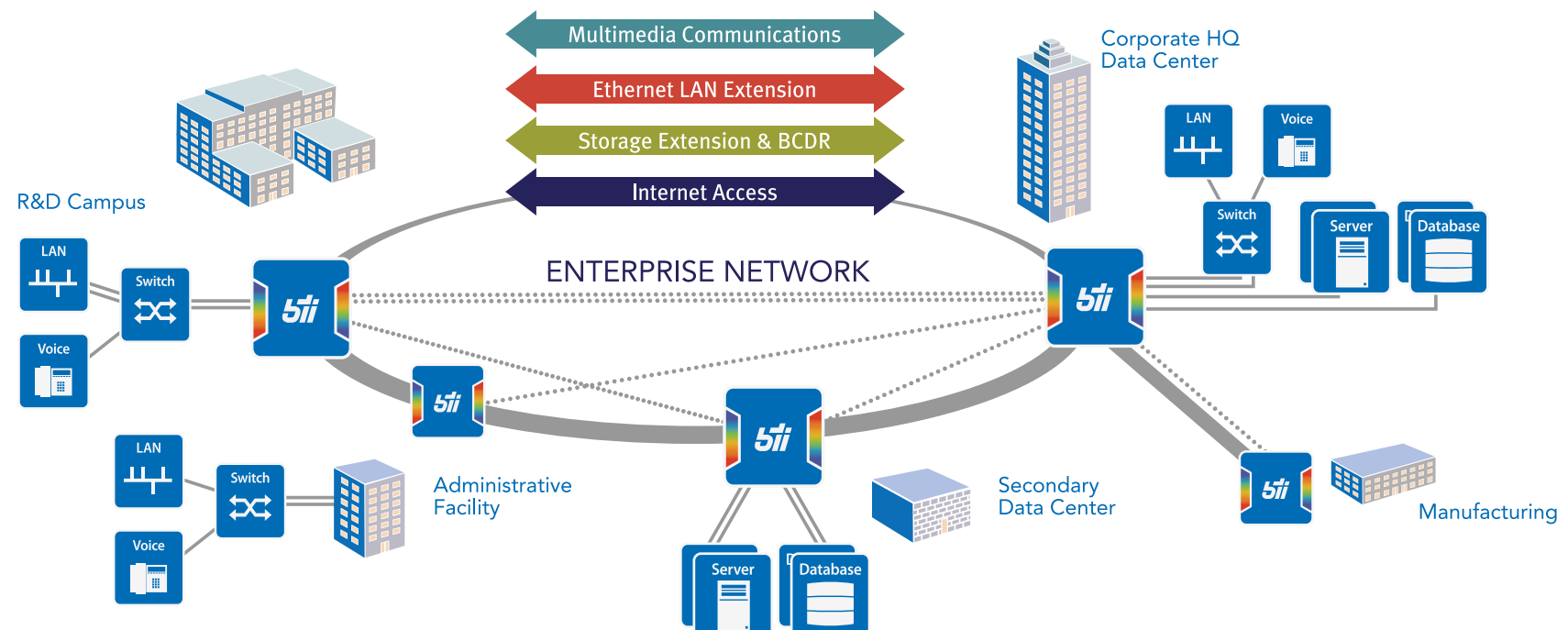
FOR ENTERPRISES

Eliminate the WAN bandwidth bottleneck with high capacity and protocol data rate independent solutions for mission-critical LAN, storage, voice, and video applications.

BTI 7000 SERIES FOR SERVICE PROVIDER APPLICATIONS



BTI 7000 SERIES FOR ENTERPRISE APPLICATIONS



BTI 7000 SERIES—SMARTER + FASTER

TECHNICAL SPECIFICATIONS

PLATFORMS

BTI 7060: 2 rack unit (RU) with 6 service slots

- Stackable solution with single entity management (up to 24 service slots)

BTI 7030: 1 RU with 2 service slots

BTI 7020: 1 RU with 2 service slots for passive modules

TRANSpondERS

Dual 1G Multiprotocol Transponder

- 100Mbps to 1 Gbps; SFP-based
- Protocols: GbE, 100FX, 1G FC/FICON, ESCON, FDDI, OC-3/OC-12, STM-1/4, DVB-ASI video
- Integrated wavelength protection

Dual 2.5G Multiprotocol Transponder

- 125Mb/s to 2.5 Gbps; SFP-based
- Protocols: GbE, 1G FC/FICON, 2G FC/FICON Express, OC-3/12/48, STM-1/4/16, 100FX, ESCON, DVB-ASI video, FDDI
- Performance monitoring
- Integrated wavelength protection

10G Multiprotocol Transponder

- 9.9 Gbps to 11.1 Gbps; XFP-based
- Fixed, tunable, and XFP-based
- Protocols: 10GbE LAN PHY, OTU-2, OC-192, STM-64, OTU-2 10GbE LAN (10.7 Gbps)
- Performance monitoring
- Forward Error Correction (FEC)

Dual 10G Multiprotocol Transponder

- 9.9 Gbps – 10.7 Gbps; XFP-based
- Protocols: 10GbE LAN PHY, OTU-2, OC-192, STM-64, OTU-2 10GbE LAN (10.7 Gbps)
- Performance monitoring
- Forward Error Correction (FEC) and Enhanced FEC
- Integrated wavelength protection

MUXPONDERS

2-port GbE Muxponder

- Client ports: 2xGbE ports + 2x10/100BaseTX ports; Line ports: 2x2.5G; SFP-based
- Protocols: GbE, 100BaseTX (RJ-45 Ethernet ports)
- Line protocols: OC-48, STM-16
- UPSR/SNCP ring protection
- Performance monitoring

10-port Multiprotocol Muxponder

- Client ports: 10xmulti-service; SFP-based
- Line ports: 2x10G; XFP-based
- Protocols: GbE; 1G FC/FICON, 2G FC/FICON Express, 4G FC/4G FICON, OC-48, STM-16
- Line protocols: OC-192, STM-64, OTU-2
- UPSR/SNCP ring protection; OTN facility protection
- Performance monitoring
- Forward Error Correction (FEC)

packetVX™

- packetVX™ 12/2: 10xSFP-based + 2xRJ45-based, 2xXFP-based
- packetVX™ 24/2: 20xSFP-based + 4xRJ45-based, 2xXFP-based
- packetVX™ 24/4: 20xSFP-based + 4xRJ45-based, 4xXFP-based
- Low Speed Port Protocols: GbE (1000baseX), 10/100/1000baseTX, FE (100FX)
- High speed port protocols: 10 GbE LAN or OTU-2 10GbE LAN (10.7G)
- Ethernet switching & aggregation: IEEE 802.1Q, IEEE 802.1ad, IEEE 802.3ad, MSTP/RSTP
- Ethernet business services: policing, rate limiting per port, CIR/EIR/CBS/EBS per flow
- Performance monitoring: RMON 2819 Ethernet
- Forward Error Correction (FEC)
- 10GbE WAN sub-50ms OTN-based protection

Micro ROADM

- 8 add/drop ports with single wavelength drop
- Integrated power equalization
- Secure wavelength pass-through design

OPTICAL AMPLIFIERS

Sub-Band Amplifiers

- Pre-Amp SPA (+27dB); Booster Amp SBA (+18dB)
- 1–16 ITU-T 100GHz DWDM wavelengths (C-band)
- Single channel: 1550nm wavelength
- Integrated power monitor taps

DWDM Amplifiers

- Pre-Amp OPA (+27dB); Booster Amp OBA (+10dB)
- Line Amp OLA (+16–26dB)
- Line Amp with Mid Stage Access OLAM (+19–29dB)
- 32 ITU-T 100GHz DWDM wavelengths (C-band)

DISPERSION COMPENSATION

- Dispersion Compensating Fiber – wideband, DWDM
- DCF modules: 20, 40, 60, and 80 km
- Fiber Bragg Grating – Channelized (100GHz)
- FBG modules: 40, 60, and 80 km

MULTIPLEXING

16 Channel ITU-T CWDM

- Mux/demux – 4 wavelength granularity
- OADM – 1 and 2 channel add/drop

32 Channel ITU-T DWDM

- Mux/demux – 8 wavelength granularity
- Active mux/demux options (integrated VOAs and PDs)
- OADM – 1, 2, and 4 channel add/drop

FIBER ADAPTATION

Splitter/Combiners/Filters

- CWDM + DWDM splitter/combiner
- 1310nm coupler/splitter (C/S)
- 1511nm, 1611nm OSC C/S
- Bi-directional DWDM (16 channels)
- Red/blue band filters
- ASE noise filter

BTI MANAGEMENT SUITE

proNX™ 900 Node Controller

proNX™ 9000 Network Manager

proNX™ 9010 Network Designer

STANDARDS COMPLIANCY

- Telcordia™ NEBS level 3 compliant
- ANSI and ETSI compliant
- Telcordia™ GR 1312-CORE, TR-NWT-000078 compliant
- Electromagnetic compatibility/radio frequency Interface: FCC part 15 Class A, GR-1089-CORE
- Shock/vibration: earthquake zone 4
- GR-63-CORE, GR-78-CORE hardened options available
- Safety: IEC/UL/CSA 60950, IEC 60825
- RoHS compliant

PHYSICAL DIMENSIONS

BTI 7060 Shelf (DxHxW)

- 10.26" x 3.48" x 17.3" (260.6.0mm x 88.5mm x 439.42mm) without front cover kit
- Weight (chassis only): 5.0/11.0 (kg/lb.)

BTI 7030 and 7020 Shelf (DxHxW)

- 10.37" x 1.75" x 17.3" (263.4mm x 44.45mm x 439.42mm) without front cover kit
- Weight (chassis only): 2.2/5.0 (kg/lb.)

POWER

BTI 7060 and BTI 7030

DC power: redundant -48VDC feeds

Redundant AC Power Kit (BTI 7060)

Redundant AC Rectifier Kit (BTI 7060)

Redundant AC Rectifier Kit (BTI 7030)

OPERATING ENVIRONMENT

Operating temperature: -20°C to +65°C (-4°F to +149°F)

Operating humidity (non condensing): 5% to 90%