



# BX7000 MULTI-ACCESS GATEWAY

## Product Overview

Mobile operators' networks are increasingly under pressure today, especially the network's backhaul portion. Demand for new bandwidth-hungry services is stretching the existing infrastructure, while declining average revenue per user inhibit investment. Operators need a new approach to mobile backhaul—one that is scalable, flexible, cost effective and ensures a smooth migration to future technologies. The BX7000 Multi-Access Gateway meets these needs. The BX7000 reliably transports TDM, ATM and packet traffic over IP/MPLS using pseudowire technology. Designed for the space and environmental constraints of the cell site, the BX7000 features common uplink types such as copper, Ethernet and DSL to support both legacy (2G and 3G) and next-generation (WiMAX and LTE) mobile technologies.

## Product Description

Juniper Networks® BX7000 Multi-Access Gateway effectively addresses the backhaul evolution challenge for mobile operators with the most operationally efficient approach. Competing cell site gateways make the evolution to next-generation (2.5G to 4G) infrastructures very challenging, as they lack the necessary scalability, density, flexibility and reliability, and are complex to deploy and manage. Moreover, the previous generation of cell site gateways are based on older expensive legacy or older IP technologies, which limits roadmaps for enhancement and inhibits the roll out of newer IP-based services. The BX7000 leverages Juniper Networks industry-leading IP/MPLS expertise as well as its circuit emulation expertise for pseudowire support of both ATM and TDM over both IP and MPLS. Designing next-generation backhaul networks based on IP/MPLS will significantly reduce OPEX of mobile operators.

Juniper's end-to-end mobile backhaul solution includes the BX7000, a Circuit Emulation PIC family for Juniper Networks M Series Multiservice Edge Routers and Juniper Networks Junos Scope management framework capabilities, plus the solution is fully aligned with Juniper's Ethernet aggregation solution with Juniper Networks MX Series 3D Universal Edge Routers. This solution extends Juniper's proven IP/MPLS leadership from the IP core to the edge of mobile operator's radio access networks. In addition to addressing operator's OPEX and bandwidth challenges today, the solution paves the way for future migration to 4G technologies.

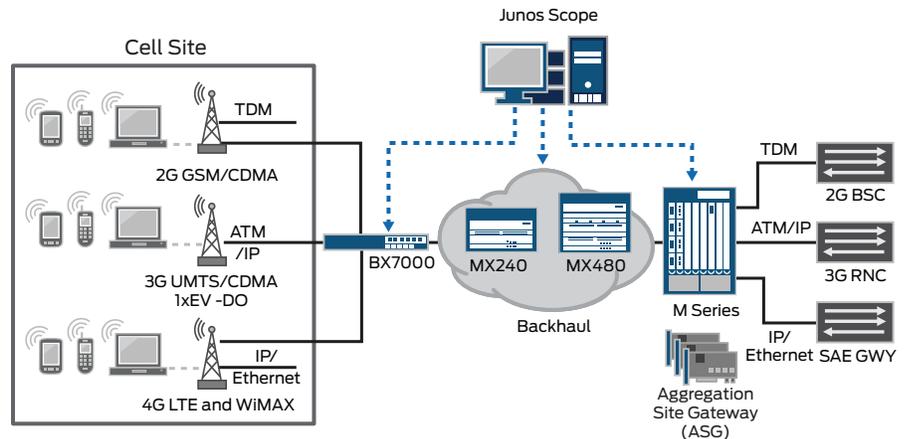


Figure 1: Juniper Networks advanced mobile solutions

Juniper's reputation as an industry leader in service provider routing and IP/MPLS provides the BX7000 with a distinct advantage in the market. The company's position as a trusted partner among mobile operators is evidenced by the fact that 11 of the 12 largest mobile operators have networks built with Juniper Networks products.

## Architecture and Key Components

Juniper Networks BX7000 Multi-Access Gateway enables operators to evolve their networks cost effectively to deploy new services, while reducing the cost of backhauling services such as voice, video and data traffic. The BX7000 is a cell site access platform with a rich set TDM, ATM, Ethernet, DSL, IP and MPLS features to support both legacy (2G and 3G) and next-generation (WiMAX and LTE) mobile technologies.

The BX7000 is a compact 17.5 x 2.6 x 9.4 in (44.5 x 6.7 x 24 cm), which enables ease of deployment in a cell site cabinet where rack space is limited. Additionally, it is available in an environmentally hardened form factor for deployment scenarios where cabinets will have additional exposure to natural elements.

The BX7000 provides an industry-leading range of port densities and interface types:

- 16 T1/E1 - RJ48C interfaces: TDM, ATM IMA, software configurable
- 3 Ethernet interfaces, Fast Ethernet and Gigabit Ethernet that can be used either user-side or network-side or for management access
- One console access interface
- One USB interface for console and one USB interface for flash drive
- Alarm relay block
- Expansion slot for an optional interface module designed to provide additional T1/E1 and Ethernet port density or access for DSL uplinks

- Expansion slot for an advanced timing module, providing a number of clocking options:
  - External sync input
  - IEEE 1588 v2
  - Synchronous Ethernet support
  - Line clocking (T1/E1)

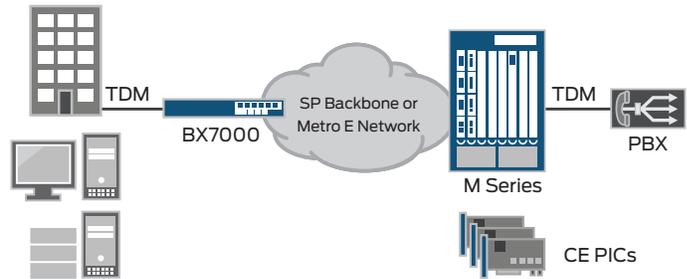


Figure 2: Wireline application of BX Series and circuit emulation PICs: TDM/ATM aggregation at CPE.

## Features and Benefits

The BX7000 is a hardened and compact system designed for deployments in cell sites. The primary application for the BX7000 is mobile backhaul over IP or MPLS networks, providing the full suite of features tailored for the backhaul market.

Key features include:

- Small form-factor
- Optionally hardened chassis
- Comprehensive suite of IP/MPLS features
- Open slot provides interface flexibility
- Various options for timing and synchronization
- Zero-touch configuration support

Feature	Advantage	Benefit
Small form-factor purpose-built for cell sites	<ul style="list-style-type: none"> <li>• Matches requirements of cell sites with sizing and pricing</li> <li>• Provides temperature hardening for elemental exposure</li> </ul>	Provides optimal solution to wireless operators' backhaul problem; addresses the current bottleneck while reducing OPEX
Interface modularity	Provides range of backhaul options with modular interface slots	Simplifies sparing strategy for operators even as they use a variety of backhaul technologies (DSL, Ethernet, T1/E1, and so on) across their network
Multiple clocking options	Offers a wide range of clocking options with optional advanced clocking module	Allows operators to pick clocking strategy of their choice: T1/E1 line timing, synchronous Ethernet, BITS, adaptive and IEEE 1588 v2, DSL NTR
Zero-touch provisioning	Allows BX7000 to configure itself out-of-the-box without manual intervention	Enables mass deployment of BX7000 at minimal operational cost
IP/MPLS-based metro backhaul architecture	Leverages Juniper's unique experience with multiservice networks, including a decade of IP/MPLS leadership with Junos® operating system; works in both IP/MPLS and IP-only networks	Allows service providers to consolidate multiple technologies, including multiple base-station vendors, on a converged backhaul network
Junos Scope for provisioning and monitoring	Provides advanced solution for both provisioning and monitoring pseudowires	Provides a guaranteed interoperability solution for provisioning pseudowires (keeping operations simple and lower cost) and monitoring them (helping the carrier's service reliability)



**BX7000**

## Specifications

This section lists basic specifications for the BX7000. For further details, refer to the hardware installation manuals on [www.juniper.net/techpubs/hardware](http://www.juniper.net/techpubs/hardware).

### Dimensions (W x H x D)

- 17.5 x 2.6 x 9.4 in (44.5 x 6.7 x 24 cm)

### Weight (lb/kg) Fully Configured

- 16.5 lb (7.5 kg)

### Power (DC/AC)

#### Option 1:

- DC [-48 V telco nominal or +24 VDC nominal] -40° to 70° C operation

#### Option 2:

- DC [-48 V telco nominal or +24 VDC nominal] -5° to 55° C operation

#### Option 3:

- Universal AC 100-240 V nominal, 50/60 Hz, -5° to 55° C operation

### Maximum Power Draw

- 65 W max

### Operating Temperature

- -40° to 158° F (-40° to 70° C) for DC hardened option
- 23° to 131° F (-5° to 55° C) for DC non-hardened option
- 23° to 131° F (-5° to 55° C) for AC option

### Humidity

- 95% RH noncondensing

### Noise level

- 0dB (acoustic noise) (negligible - only passive cooling is used)

### Approvals

#### Safety Approvals

- CAN/CSA-C22.2 No. 60950-1-03 - UL 60950-1
- EN 60950-1
- EN 60825-1
- EN 60950-1 – CB Scheme

### EMC

- AS/NZS CISPR22 Class B
- EN55022 Class B
- VCCI Class B
- FCC Part 15 Class B

### Immunity

- EN-61000-3-2 Power Line Harmonics
- EN-61000-3-3 Voltage Fluctuations and Flicker
- EN-61000-4-2 ESD
- EN-61000-4-3 Radiated Immunity
- EN-61000-4-4 EFT
- EN-61000-4-5 Surge
- EN-61000-4-6 Low Frequency Common Immunity
- EN-61000-4-11 Voltage Dips and Sags

### ETSI

- ETSI EN-300386-2 Telecommunication Network Equipment, Electromagnetic Compatibility Requirements

### NEBS

- SR-3580 NEBS Criteria Levels (Level 3 Compliance)
- GR-63-CORE: NEBS, Physical Protection
- GR-1089-CORE: EMC and Electrical Safety for Network Telecommunications Equipment

### Telecomm Compliance

- RTTE Directive 1995/5/EC
- T1 and XDSL Interfaces
- FCC Part 68
- Industry Canada CS-03
- JATE Green Book
- TBR 21 (XDSL only)
- E1 Interface
- TBR 12/13
- ACA TS016
- G.703

### Management

- Element Management: CLI, NETCONF
- Policy Management: Junos Scope
- SNMP: SNMP v2/v3 bilingual agent support

## Juniper Networks Services and Support

Juniper Networks is the leader in performance-enabling services that are designed to accelerate, extend, and optimize your high-performance network. Our services allow you to maximize operational efficiency while reducing costs and minimizing risk, achieving a faster time to value for your network. Juniper Networks ensures operational excellence by optimizing the network to maintain required levels of performance, reliability, and availability. For more details, please visit [www.juniper.net/us/en/products-services](http://www.juniper.net/us/en/products-services).

## Ordering Information

Model Number	Model Name and Description
BX7000BASE-AC	BX7000 base unit: 2 open slot chassis, 16 built-in T1/E1 Ports, 3 built-in 10/100/1000 ports (optics sold separately), passive cooling, 1 AC power supply, and optional cards sold separately
BX7000BASE-DC	BX7000 base unit: 2 open slot chassis, 16 built-in T1/E1 ports, 3 built-in 10/100/1000 ports (optics sold separately), passive cooling, 1 DC power supply, optional cards sold separately*
BX7000BASE-DC-H	Hardened BX7000 base unit: 2 open slot chassis, 16 built-in T1/E1 ports, 3 built-in 10/100/1000 ports (optics sold separately), passive cooling, 1 DC power supply, optional cards sold separately (-40 to +70 degree centigrade operation)*
PWR-BX7000-AC-R	BX7000 AC redundant power supply option (ordered with base unit)*
PWR-BX7000-DC-R	BX7000 DC redundant power supply option (ordered with base unit)*
PWR-BX7000-DC-H-R	BX7000 hardened redundant DC power supply option (-40 to +70 degree centigrade operation)
PWR-BX7000-AC-S	BX7000 AC power supply spare*
PWR-BX7000-DC-S	BX7000 DC power supply spare*
PWR-BX7000-DC-H-S	BX7000 hardened DC power supply spare*
TCA8000-OCXO-DC	Timing Server, 8-port T1/E1 BITS, OCXO, DC power
TCA8500-RB-DC	Timing Server, 8-port T1/E1 BITS, Rubidium, DC power
TCA6000-DC	Timing Client, 2-port T1/E1 BITS, OCXO, DC power
TCA6500-D	Timing Client, 2-port T1/E1 BITS, OCXO, DC power, GPS

\* All power cords are sold separately

## About Juniper Networks

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at [www.juniper.net](http://www.juniper.net).

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