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Nightingale™ XB Series Traffic-Shaping/QoS Appliances

Installation and User Guide

Models: XB14m-750 and XB14m-750G

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Overview

The Nightingale™ XB family of Traffic Shapers are network devices that operate in transparent bridge mode. The XB14m family are 1-WAN x 3-LAN devices with a management port (MAN) that simplifies installation in complex network configurations.

The traffic-shaping properties of the Nightingale are engineered to ensure a high quality of service for real-time sensitive voice traffic to and from IPFINITY's CloudVoice™ infrastructure, with minimal impact on the data passing through.

By operating in transparent bridge mode, the XB family of Nightingales greatly simplify network installation in any network, large or small.

All XB14 devices are shipped with power adapters (110VAC-9VDC).

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Architecture

The Nightingale™ XB14m family of Traffic Shapers are internally organized as two separate devices.

A layer-2-only device exists between the WAN and LAN ports: effectively behaving like an Ethernet switch for devices on either side. All ethernet frames are switched, unmolested, between these ports; however, traffic shaping rules, i.e. prioritization, is only applied to IP traffic transiting between the WAN and LAN ports. No traffic shaping is applied to non-IP traffic or other switched traffic.

The MAN (management) port is the means by which the Nightingale accesses IPFINITY's servers to obtain updates and report status. For security reasons, the LAN-WAN ports and the MAN port are hardware isolated. Therefore if the MAN port is disconnected the Nightingale will continue to function with its existing configuration but will not receive any updates, nor report its status.

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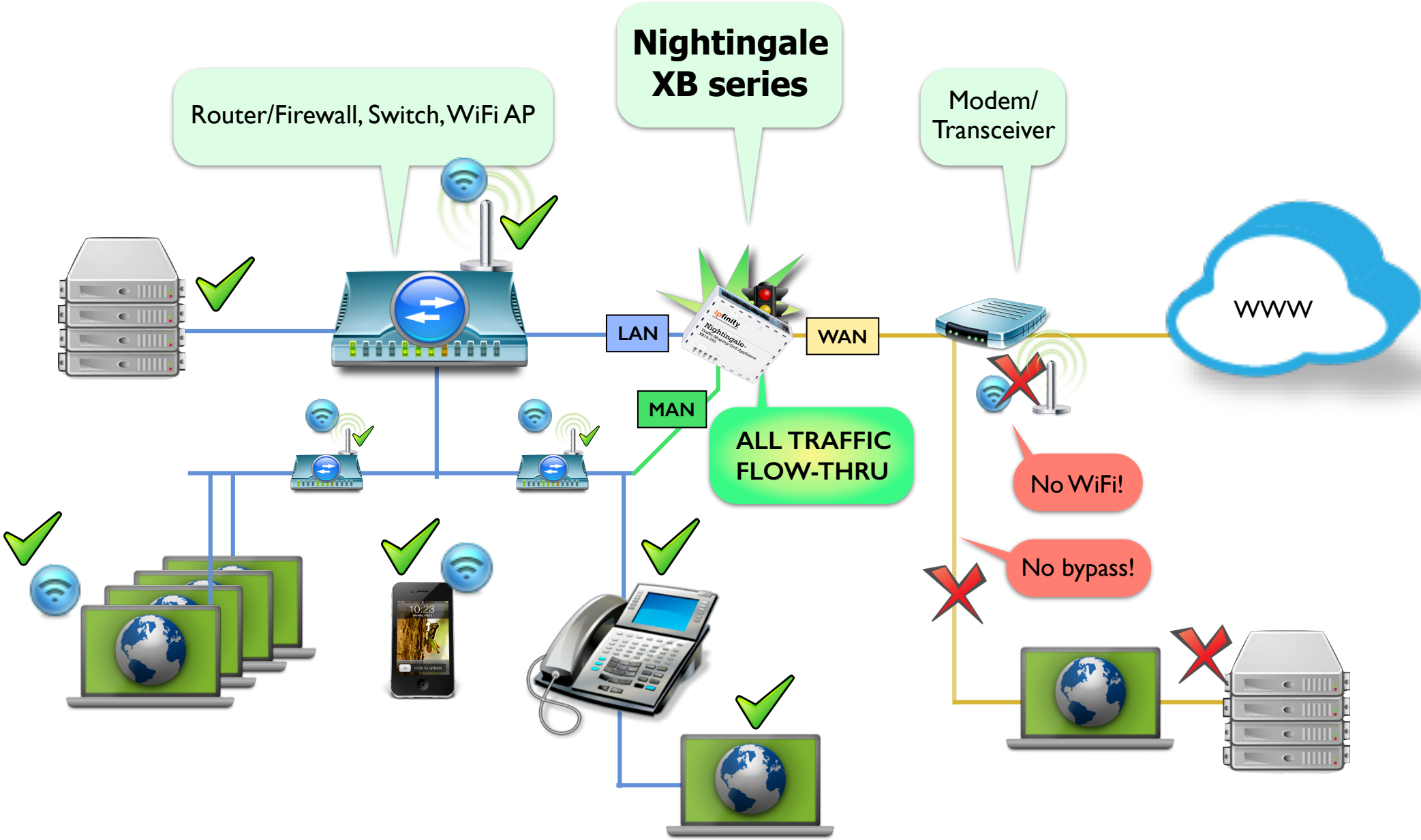
Simplified Network Diagram



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1. Analyze

1. While your network is quiescent, from a PC wired to the most upstream point in your network, perform five consecutive Internet speed tests (speedtest.net). Discard the first two results and report the last three sets of results (a set of 9 values) to your IPFINITY provisioning team via the turnup ticket.
2. Direct your browser to the Berkeley Netalyzer. Perform network test and send a copy of the results' permalink to the IPFINITY provisioning team.

   The above procedures are detailed in the IPFINITY Support Portal: https://ipfinity.zendesk.com/entries/24891881-How-to-analyze-test-your-Internet-connection
3. The results from the above tests will be used by the IPFINITY team to configure your Nightingale.

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2. Connect

1. Splice the Nightingale into your network as far upstream (towards the Internet) as you like while the network traffic still remains IP (e.g., not PPPoE). Connect the WAN port of the Nightingale to the next upstream device. For security or convenience you may install the Nightingale downstream of your firewall device.
2. Connect port 2 (LAN) to the LAN-side (downstream side) of your network. The other LAN ports are switched and may also be used if needed.
3. Connect Port 5 ("MAN") anywhere on the LAN where it can access a DHCP server and access the Internet.
4. *ALL network traffic must pass through* the Nightingale. Therefore do not permit bypass routes around the Nightingale.

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2. Configure

1. Allow the Nightingale to access the Internet by enabling access through your firewall (details in the following table).
2. Forward public ports 7022 and 7080 to Nightingale's MAN port to allow IPFINITY technicians to access the Nightingale via PKI/SSH if needed (optional but recommended).
3. Power up. On first power up, an XB14m Nightingale may take up to five minutes configure.

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4. Test

1. Verify that your network is functioning correctly.
2. Optional: Stress-test your Internet with the Nightingale installed. The details for this procedure are to be found in IPFINITY's Support Portal here: https://ipfinity.zendesk.com/entries/24891881-How-to-analyze-test-your-Internet-connection

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Do's and Don'ts

- XB series Nightingales are transparent bridge-mode devices. All Ethernet frames (all IP packets, all protocols) are transparently switched between the WAN and LAN interfaces. Only IP traffic is prioritized between the WAN and LAN interfaces.
- *In order for the Nightingale to function effectively, all network traffic must pass through it.* Therefore do not allow bypass routes around the Nightingale, such as by enabling WiFi in an upstream device.
- XB14m series Nightingale devices require Internet access for updating themselves upon power up and periodically thereafter. They request an IP address side from the MAN port (DHCP), and access the Internet for fetching updates and providing status using several IP protocols that are detailed in the following table.

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Network Specifications

Parameter	Setting	Notes
Ethernet ports	Fast Ethernet or Gigabit Ethernet	Auto switching 10/100/1000, depending on the model
MAN port	**Parameters**	**These apply to the MAN port only.**
IP Network parameters	DHCP	The MAN port obtains its network parameters over DHCP. At a minimum, IP, netmask and gateway are required.
Domain name service	DNS	If no resolver is provided over DHCP (or the provided resolver does not respond) the following public name servers may be accessed: 8.8.8.8, 208.67.222.222, 208.67.220.220, 8.8.4.4.
Configuration updates	HTTP	getafix.ipfinity.com (23.253.34.107).
Network Time	NTP	primary-ntp=216.234.161.11 secondary-ntp=67.212.94.227. Accurate network time is required for log entries.
Reporting	SMTP with password authentication	SMTP gateway: 216.70.64.95.
QoS	Disable in all non-Nightingale devices	Nightingale performs QoS/traffic shaping in tandem with IPFINITY's CloudVoice™ infrastructure. In order to prevent "queue thrashing" (instability) we **strongly recommend** that all queue-based QoS features in devices such as firewalls and routers that are in series with the Nightingale **be switched OFF**.
SIPALG	Disable	If this setting exists in any of your network devices, it must be **set to OFF**.
Remote management	SSH	We recommend that public ports 7022 and 7080 be forwarded to the IP procured by the MAN port. All SSH access is via PKI.

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Hardware Specifications

Models	XB14m-750 (10/100 Fast Ethernet
	XB14m-750G (10/100/1000 Gigabit Ethernet)
Operating mode	Transparent IP bridge mode with real-time traffic shaping (prioritizing)
Ports	1-WAN; 3-LAN; 1-MAN
Ethernet ports	Fast Ethernet or Gigabit Ethernet
Data throughput	>90kpps, >60Mbps under maximum network load
LEDs	1-Power, 1-ACT, 5-Ethernet
Dimensions	113 x 89 x 28 mm
Power	9VDC, 3W max, (110VAC power adapter included)
PoE use/supply	No
Processor	Qualcomm

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For questions or help with configuration

1-855-IPFINITY ext 2

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