MultiTech Bluetooth® Network Access Point

Administrator Guide
MultiTech Bluetooth Network Access Point Administrator Guide
S000619 Rev 1.2
For use with model: MT200B2E

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Warranty
To read the warranty statement for your product, please visit: http://www.multitech.com/warranty.go.
Overview

MultiTech’s Bluetooth Network Access Point (NAP) facilitates communication between Bluetooth network devices and Ethernet-based devices. The Bluetooth radio supports at least two concurrent Bluetooth device connections. The Bluetooth NAP supports both legacy LAN Access Point (LAP) Profile and Personal Area Networks (PAN) Profile.

The Bluetooth NAP provides the following capabilities, which can be used together or separately:

- Bluetooth IPv4 LAN access for local Bluetooth-to-Bluetooth device communications
- Bluetooth IPv4 WAN access for Bluetooth device communications to an external Intranet or the Internet.

The following sections describe these capabilities in greater detail.

Bluetooth LAN

The Bluetooth LAN capability allows for direct communication between:

- Bluetooth devices that both act as Bluetooth masters (that is, they initiate Bluetooth network access connections).
- Heterogeneous Bluetooth devices, such as legacy Bluetooth devices supporting only the LAP Profile, and newer Bluetooth devices supporting only the PAN NAP Profile.

When using the Bluetooth LAN capability alone, an Ethernet cable is not attached to the Bluetooth NAP. By default, the Bluetooth NAP allocates local IP addresses for connecting Bluetooth devices from the 172.29.0.0/16 network.

Bluetooth WAN

Bluetooth WAN capability uses Network Address Translation (NAT) to forward communications between the local Bluetooth network and the external WAN. The NAT technique used depends upon the WAN’s DHCP capabilities:

- If the WAN DHCP server recognizes the Client-ID DHCP request parameter, the Bluetooth NAP uses 1-to-1 NAT.
- If the WAN DHCP does not recognize the Client-ID DHCP request parameter, it uses 1-to-N NAT.

The Bluetooth NAP makes WAN DHCP requests using the Bluetooth address of the connecting device as the Client-ID. In this way, static IP addresses can be pre-assigned on the WAN-based DHCP server. The Bluetooth NAP itself does not use a WAN IP address, but acts as a bridge between the WAN and the local Bluetooth network.

Bluetooth Operation and Security

To provide the utmost security, the Bluetooth NAP is by default, neither discoverable nor pair-able via Bluetooth operations. That is, the Bluetooth NAP is not visible to normal Bluetooth inquiry scans and is not in pairing mode without explicit action.

The Bluetooth NAP authenticates all connections. For paired devices, it is always available for either PAN or LAP connections. Additionally, all connections are encrypted.

The Bluetooth NAP relies on physical security to control access. The user must explicitly initiate the discovery and pairing process by pressing a button on the back of the Bluetooth NAP for 500 milliseconds after which a pairing indicator on the front panel flashes. This puts the Bluetooth NAP into pairing mode for a fixed period (one hour by default) or until a device successfully pairs with it. The user may press the button for at least 5 seconds to cancel pairing mode. Use the configuration interface to change the default pairing time.
Because it relies on physical security, the Bluetooth NAP uses a fixed default PIN of 123456 and supports only legacy pairing, not Secure Simple Pairing (SSP). You can use the configuration interface to change the default PIN; however, some connecting devices may rely on the default PIN value to successfully pair.

To clear all existing Bluetooth pairings from the Bluetooth NAP, exit pairing mode, if necessary. Then, press the pairing button for 10 seconds. This transitions the pairing indicator on the front panel from a flashing state to a solid state. When you release the button, the Bluetooth NAP resets (reboots).

To put the Bluetooth NAP in configuration mode, press and hold the pairing button while powering up the Bluetooth NAP. See Configuration for more information.

**CAUTION:** Ethernet ports and command ports are not designed to be connected to a public telecommunication network or used outside the building or campus.

### Indicator Lights

The Bluetooth NAP has indicator lights on both the front and the back. The front indicator lights are as follows:

<table>
<thead>
<tr>
<th>Icon</th>
<th>Light</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="icon-power.png" alt="Power" /></td>
<td>Power</td>
<td>Lights when power is applied to the Bluetooth NAP</td>
</tr>
<tr>
<td><img src="icon-pairing.png" alt="Pairing" /></td>
<td>Pairing</td>
<td>Lights when pairing mode is in effect. See <em>Bluetooth Operation</em> for details.</td>
</tr>
<tr>
<td><img src="icon-pan.png" alt="PAN Connection" /></td>
<td>PAN Connection</td>
<td>Lights when the Bluetooth NAP is hosting a PAN Bluetooth session.</td>
</tr>
<tr>
<td><img src="icon-lap.png" alt="LAP Connection" /></td>
<td>LAP Connection</td>
<td>Lights when the Bluetooth NAP is hosting a LAP Bluetooth session.</td>
</tr>
</tbody>
</table>

There are two special cases for the front indicator lights.

- When it is initially ready for operation, three of the four indicators are lit.
- When the pairing button is pressed and held during power-up, the pairing indicator and both connection indicators are momentarily lit. Then, the Bluetooth NAP enters a configuration state. See Configuration for more information.

There are two Ethernet indicator lights on the back:

- The left Ethernet light, when blinking, indicates the device is connected to an operational Ethernet peer.
- The right Ethernet light, when lit, indicates that at least one PAN or LAP connection has a WAN IP address.
Configuration

The Bluetooth NAP is configurable through the USB power/peripheral interface. To put the Bluetooth NAP in configuration mode, press and hold the pairing button while powering up.

While in this state and attached to a USB host such as a PC, the Bluetooth NAP appears as a USB serial device on the USB host. Use a serial console program such as TeraTerm to access the Bluetooth NAP’s command line interface (CLI).

A password secures the CLI. The default username and password are both btnap. Following password authentication, the CLI displays a prompt and accepts the following commands:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>set password</td>
<td>Changes the CLI password.</td>
</tr>
<tr>
<td>set subnet</td>
<td>Displays/changes the value of x in 172.x.0.0. This is the non-routable Class-B network used internally in the Bluetooth NAP. The default is 172.29.0.0. Valid values are 16-31.</td>
</tr>
<tr>
<td>show subnet</td>
<td></td>
</tr>
<tr>
<td>set pin</td>
<td>Displays/changes the value of the Bluetooth pairing PIN. The default is 123456.</td>
</tr>
<tr>
<td>show pin</td>
<td></td>
</tr>
<tr>
<td>set duration</td>
<td>Displays/changes the Bluetooth pairing duration. Units are seconds. The default is 3600. Valid values are in the range of 30 to 3600.</td>
</tr>
<tr>
<td>show duration</td>
<td></td>
</tr>
<tr>
<td>exit</td>
<td>Exits the current configuration session.</td>
</tr>
<tr>
<td>quit</td>
<td></td>
</tr>
</tbody>
</table>
Topography and Addressing

Bluetooth LAP interfaces (pppX in Figure 1) that connect devices receive 172.29.Y.2 addresses. The Bluetooth NAP receives 172.29.Y.1 addresses. Here, \( Y = 10 + X \). A restriction of PPP connections is that LAP devices are not part of lan0. Layer 3 network traffic is routed between devices on lan0 and the various LAP connections.

![Diagram](image-url)
Figure 2 is a conceptual view of the Bluetooth WAN networking configuration and associated addressing as established by the Bluetooth NAP. The Bluetooth LAN networking is maintained as described above.

The Bluetooth WAN networking adds an alias interface to eth0 for each connected PAN and LAP device. A DHCP client establishes the addresses for these interface aliases via broadcasts over eth0. The BNAP NATs actual device LAN IP addresses to their corresponding WAN addresses.