

# REMOTE ACCESS ENABLEMENT PURITAN BENNETT™ 980 VENTILATOR INSTALLATION & REFERENCE GUIDE –

FEATURE HAS NOT BEEN CLEARED BY US FDA

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## PREFACE

The ability to adjust a Puritan Bennett™ 980 ventilator from outside of a patient room is available through the Remote Access Omnitool software. This software has been created as an emergency response to the COVID-19 virus in accordance with the: "Enforcement Policy for Ventilators and Accessories and Other Respiratory Devices During the Coronavirus Disease 2019 (COVID-19) Public Health Emergency".

Remote Access Omnitool software has not been cleared by US FDA.

## THIS GUIDE WILL HELP YOU:

Enable & Use the Remote Access Omnitool software to adjust settings on a PB980 ventilator outside of the care room.

Hospital staff and IT department will be responsible for obtaining and configuring the hospital's site equipment required to utilize the Remote Access Omnitool software. Technology configuration recommendations may include risks related to supportability that must be understood by Hospital staff prior to implementation of this option, as this option has not been 510k cleared by US FDA. Hospitals should remain in compliance with their own IT security and controls policies.

## RECOMMENDED COMPUTER SPECIFICATIONS

The following information is provided as general guidance on the minimum recommended configuration for the PB980-attached computer. These recommendations assume the computer is a single-purpose device used solely as an interface for the ventilator. Additional hospital-specific functionality and/or security requirements may increase these requirements and should be assessed on a case-by-case basis:

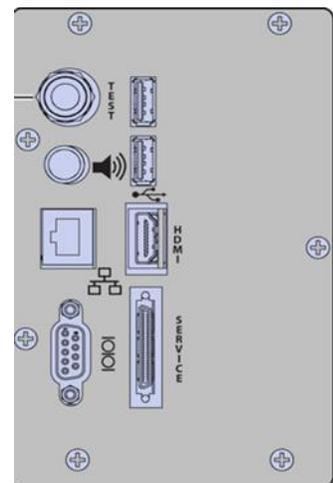
### Minimum requirements for Omnitool

OS:	Windows 10
CPU:	Modern architecture (<5 years old)
RAM:	2GB
SSD:	32GB
Network:	One RJ-45 Ethernet (native or via USB adapter)
USB:	One or more USB 3.0 or better

**IMPORTANT:** The offered feature/design is to enable console access to the PB980 ventilator via on-site service & repair only, the units do not have DHCP. As such, a 1:1 computer to ventilator ratio is required to activate remote management. The computer can be multi-purposed. Computers that are already at the bedside for clinical documentation can be leveraged to support this 1:1 ratio. Whether the computer is placed at the patient bedside or outside the patient room is up to the individual health system. Other solutions are being developed to enhance the PB980 ventilator remote support experience.

Only the HDMI and Ethernet ports on the PB980 are needed as a part of this guide.

- HDMI from PB980 to external display does NOT carry audio. Video only.
- USB ports on the PB980 are not recommended for delivering power to any video accessories.



## TECHNOLOGY RISKS

- Long HDMI cables subject to signal loss. Ethernet and HDMI cables are subject to interference.
- Longer Ethernet and HDMI cables should be labeled at the ends to reduce risk of misidentifying ventilators.
- Wireless HDMI casting devices are subject to interference.
- Hostnames/IPs for use with remote access to computers connected to PB980s should be carefully documented to reduce risk of accessing incorrect ventilator.
- Responsiveness of mouse movements made in the remote control Omnitool being displayed on the PB980 screen may be impacted by wireless implementations or network/computer other latency issues.
- Risk related to network based remote access to the PB980 ventilator attached computers can be lowered due to the Hospital's internal controls (i.e., no need for access from Internet).
- **Remote access risk can also be mitigated with cabling from the PB980 directly to a computer outside the room, not connected to any network.**
- Updates may be available to Omnitool, requiring coordination between Hospitals and Medtronic.

## ASSUMPTIONS

- Computers with appropriate minimum specifications already at a Hospital, if unused, can be repurposed to support this initiative and lower cost.
- Computers used will likely need to be imaged to the hospital's standards to operate on their network.
- Hospitals will support their specific computer, network and AV technology configurations.
- Medtronic will provide support for issues with Omnitool, and limited guidance for network, computer or AV configuration.
- Hospitals are able to support implementation by provisioning computers, cables and accessories.

## DEPENDENCIES

- Hospitals can use default or preferred Windows 10 remote access tools on their internal network, if connecting to the computer attached to the PB980 ventilator over the network vs. direct connect.
- Computer connected to the PB980 via Ethernet must have the local firewall configured to allow access over **port 32274** to IP **192.168.0.12** to enable Omnitool.
- Computer connected to the PB980 will require power nearby.
- HDMI to Ethernet and HDMI to USB adapters/converters may require external power supply from inside the care room, and potentially at the computer used outside the care room.

# **PREPARING THE DEDICATED PB980 WINDOWS 10 COMPUTER FOR OMNITOOL USE**

## PREPARING THE DEDICATED PB980 WINDOWS 10 PC FOR OMNITOOL USE

1. Prepare a computer for dedicated connection to the PB980 ventilator per the RECOMMENDED COMPUTER SPECIFICATIONS section Page 6 in this document. Form factor is hospital's discretion.
2. **Critical:** Ensure the latest version of .Net for Windows 10 is installed, reboot the machine as needed.
  - a. <https://dotnet.microsoft.com/download/dotnet-framework>
3. Connect / configure built-in or USB HDMI video capture adapters if used.
  - a. Install and test card manufacturer's display program. Reboot the machine as needed.
  - b. Connect HDMI cable from ventilator to HDMI video capture adapter if used.
  - c. Confirm the PB980 ventilator display is active on the connected Windows 10 computer.
4. Connect / configure any USB Ethernet adapters needed, reboot the machine as needed.
  - a. Set the laptop's Ethernet interface to static IP 192.168.0.10 and Subnet Mask to 255.255.255.0.
  - b. If a local firewall is running on the computer, make the following rule change:
    - i. Open **port 32274** two-way to **192.168.0.12**, the PB980 ventilator's IP.
5. If using Remote Desktop to interact with this ventilator connected computer:
  - a. Configure the other Ethernet or Wireless network interface to the desired hospital network.
  - b. Enable Remote Desktop and configure user permissions.
  - c. Confirm the Remote Desktop connection works and is labeled accurately.
  - d. The PB980 ventilator connects to one Omnitool application at a time. Simultaneously connecting multiple Omnitool applications in separate Remote Desktop logins is not supported.
  - e. A single shared Remote Desktop login might be required to prevent multiple Omnitool applications from connecting.

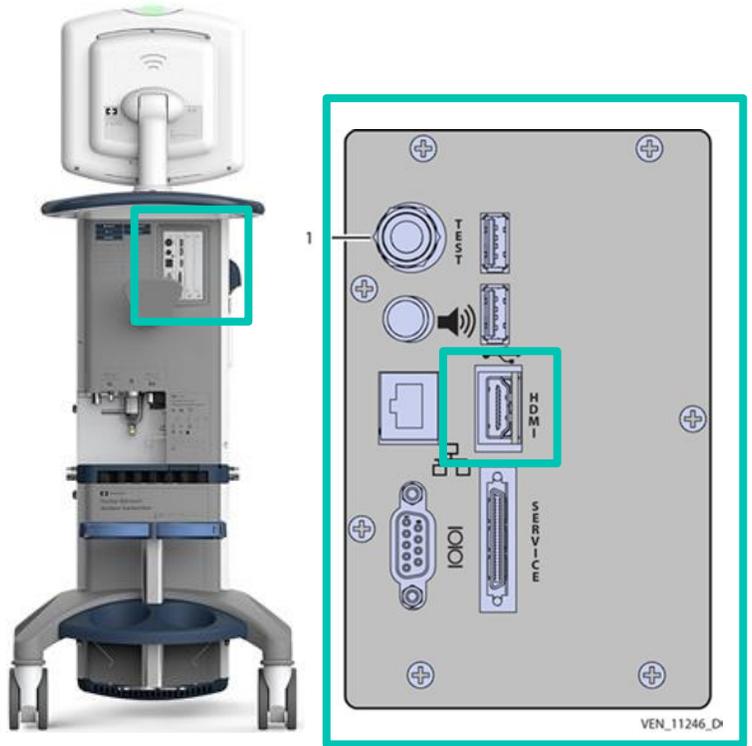
# SETTING UP AN EXTERNAL DISPLAY FOR THE PB980 VENTILATOR

# SETTING UP AN EXTERNAL DISPLAY FOR THE PB980 VENTILATOR

The rear panel on a PB980 has an HDMI output connection. You may leverage this to connect to an external display and mirror the PB980 screen outside the patient care room. The PB980 has a 1024x768 screen resolution.

An HDMI video capture tool on the same computer attached to the PB980 to run Omnitool, to see the tool and PB980 display screen side-by-side.

NOTE: PB980 HDMI output does NOT carry audio. Video only.



Recommendation for capturing the PB980 HDMI output signal on the same Windows 10 device connected via Ethernet to the PB980 if you are enabling remote control. This configuration allows a user to see the remote access Omnitool and PB980 display on the same Windows 10 device.

- A. Requires a Windows 10 device capable of capturing HDMI signal via an on-board video capture card, or add-on USB video capture tool.
- B. Third party software would be installed on the dedicated Windows 10 device connected to the PB980, to display the ventilator screen in a window next to the Omnitool remote management software.

Note: Success in using HDMI video capture on a Windows 10 device is dependent on CPU, memory, cooling and other minimum hardware requirements from the 3rd party tool vendor. Be aware of these to ensure responsive quality of your captured HDMI video.



Note: All images are for example purposes only.

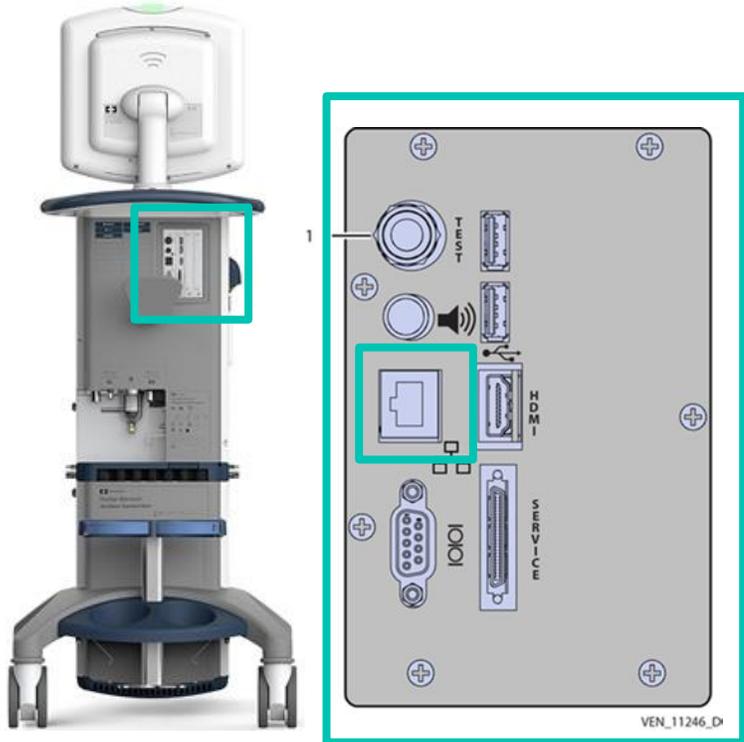
# **ENABLING REMOTE MANAGEMENT FOR PB980 VENTILATORS (HOSPITAL NETWORK ONLY)**

# ENABLING REMOTE MANAGEMENT FOR PB980 VENTILATOR

The rear panel on a PB980 has an Ethernet connection. You may connect a Windows 10 computer to each PB980 in the hospital. A 1:1 relationship between a Windows 10 device and PB980 is required due to current TCP/IP remote support limitations with the product. The Ethernet connection can only be used to allow Medtronic's Omnitool, installed on that Windows 10 computer, to interact with the PB980. The Ethernet connection will not produce any other input/output control via Windows 10.

To enable remote management, a dedicated connection to a Windows 10 computer (e.g., Laptop, Desktop, Mini/Small form factor) is needed from **the Ethernet port on each PB980, Omnitool installed on the computer and enabled to be remotely** accessed in a variety of ways from outside the care room:

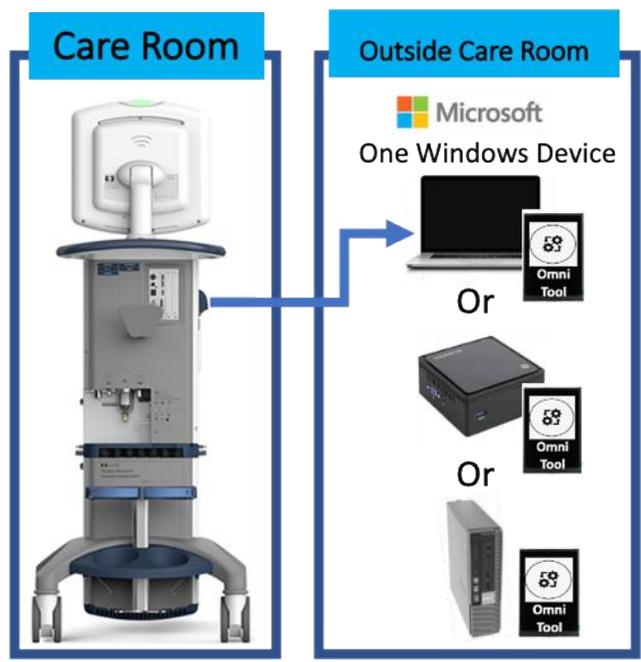
- RM1. Use one physically connected dedicated computer via long Ethernet cable from the PB980 to outside of the room.
- RM2. Use an existing bedside computer by adding a secondary Ethernet connection via USB and an Ethernet cable from the PB980 to that bedside computer.
- RM3. Use two dedicated computers to eliminate Ethernet being run out of the room by adding one new computer connected to the PB980, and another dedicated computer outside, connecting via remote desktop over hospital network.
- RM4. A many-to-one configuration with a dedicated computer at each PB980 and allowing any computer in the hospital to connect via remote desktop from outside the care room.



Note: All images are for example purposes only.

**RM1. Using one physically connected dedicated computer** by extending a long Ethernet cable from the PB980 outside of the room.

- A. Network cable to be secured by Hospital IT for the run out of the patient room to a nearby computer.
- B. Dedicated Windows 10 computer has appropriate minimum hardware and software as defined later in this document.
- C. Computer can be used by authorized staff to use installed Omnitool to interface with a PB980 ventilator.



Note: All images are for example purposes only.

**RM2. Use an existing bedside computer** by adding a secondary Ethernet connection via USB and an Ethernet cable from the PB980 to that bedside computer.

- A. Allows for reuse of existing bedside Windows 10 PC. Hospital can manage the addition of the secondary Ethernet device.
- B. Install & test Omnitool on the bedside machine now connected to PB980 and ensure remote access to that Windows 10 computer is enabled. Access from wired or wireless hospital network.

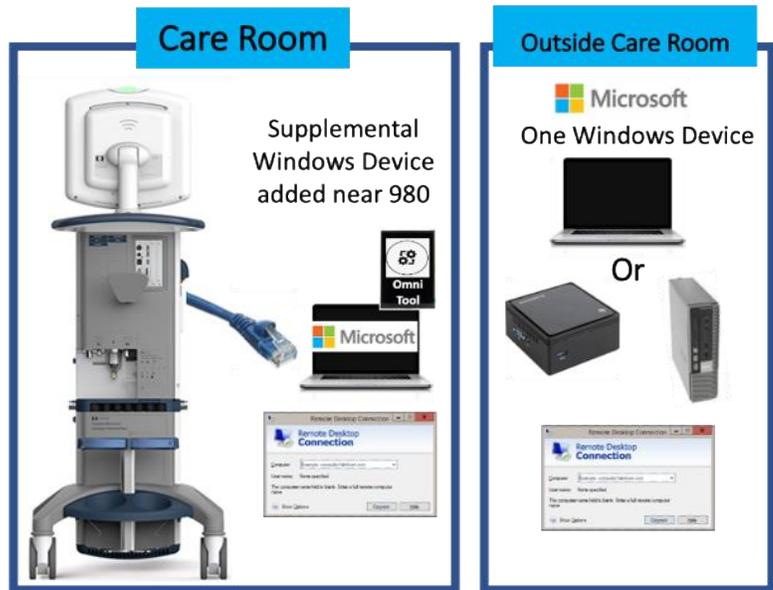


Note: All images are for example purposes only.

**Note:** Bedside computer may be WiFi enabled, leaving built-in Ethernet available for use in communicating with the local PB980, or the need for a USB Ethernet adapter to be added.

**RM3. Use net-new dedicated computer** to eliminate Ethernet being run out of the room by adding one new computer connected to the PB980, and another dedicated computer outside, connecting via remote desktop over hospital network.

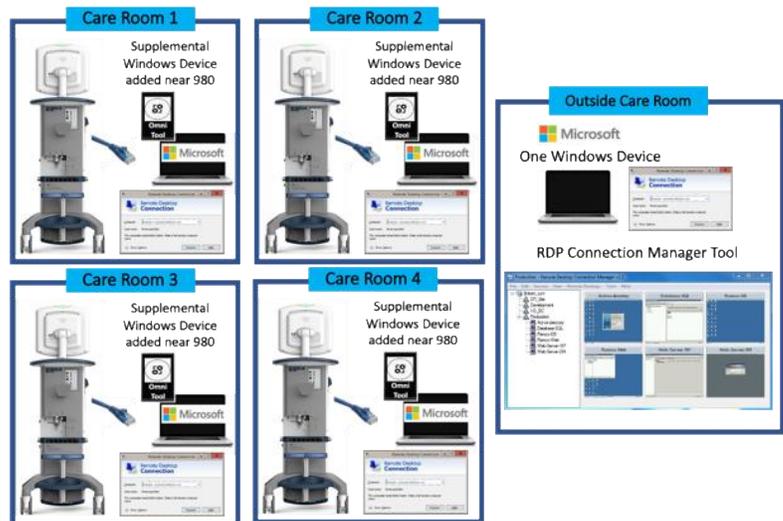
- A. Dedicated Windows 10 computer in care room connects to PB980. Having a dedicated computer outside of the care room, to access care room computer over wired or wireless hospital network, may expedite response times based on recognition and physical proximity.
- B. Ensure dedicated PC outside of care room is physically secured.



Note: All images are for example purposes only.

**RM4. A many-to-one configuration with a net-new dedicated computer at each PB980 while allowing any computer in the hospital to connect via remote desktop from outside the care room.**

- A. Essentially combines options 2 and 3 (assumes no existing bedside computer) now allowing access over remote desktop from any other machine on the wired or wireless hospital network. (i.e., no dedicated computer outside the room).
- B. **Carefully inventory** of each PB980 connected computer hostname or IP is required to effectively manage one computer accessing many rooms/PB980s over hospital network.



Note: All images are for example purposes only.

# USING OMNITOOL FROM MEDTRONIC FOR REMOTE MANAGEMENT

## LAUNCHING OMNITOOL

1. Obtain Omnitool SW package from Medtronic Field Service Engineer
  - a. Unzip the file and place the enclosed folder on the Windows desktop of the computer that will be left connected to the PB980.
  - b. Directory contents should appear as shown below:



## USING OMNITOOL

The goal of Omnitool is to replicate the process of physically making setting changes on the PB980. While this may not be an exact visual match 1:1, you should be able to make all applicable settings changes from outside of the patient care room.

1. Open the **Omnitool.exe** file within the new directory. The PB980 ventilator connects to one Omnitool application at a time.
2. Ensure the Omnitool application screen and actual PB980 display are both visible to the user based on your display configuration from earlier in this guide, similar to the images on the right.
3. Using the mouse within the Omnitool software (top image), position your pointer on the ventilator feature you want to interact with.
4. Click the mouse to put focus on that feature and confirm on the actual PB980 display it is selected (bottom image).



5. Now, use the mouse to adjust the settings with the Omnitool and they will be reflected on the PB980.

- Use the mouse wheel to make necessary adjustments.
- Use the Up and Down settings to make necessary adjustments.
- Turn the Knob Control with your mouse scroll wheel as necessary during settings changes.
- Using other soft bezel keys on the top of Omnitool, you may audio paused/ silence or reset alarms or adjust other settings as shown.



## TROUBLESHOOTING & SUPPORT

### Omnitool does not connect to PB980

1. Verify the Ethernet cable is connected between the PB980 and Windows 10 PC.
2. Verify the Windows 10 Ethernet adapter connected to PB980 has **Internet Protocol Version 4 (TCP/IPv4)** setting is set to IP address **192.168.0.10** and subnet mask **255.255.255.0**.
3. Verify another Omnitool application is not already connected to a PB980.
4. Verify that a separate user login does not have an Omnitool application connected.
5. Verify the **Remote Access** option is checked on the **Options > Installed Options** screen within the PB980 Service Mode.
6. Unplug Ethernet cable from PB980, wait 30 seconds, connect Ethernet cable and try connecting with Omnitool again.

### Omnitool does not start

1. Restart PC
2. Verify Omnitool is used on a Windows 10 PC.
3. Verify **Omnitool.exe** and **FunkyLibrary.dll** are copied to the same local directory.
4. Verify Windows 10 user privileges allow running Omnitool.
5. Verify Windows 10 antivirus or firewall settings allow running Omnitool.
6. Update the Windows .NET Framework.
  - a. <https://dotnet.microsoft.com/download/dotnet-framework>

## FOR MORE INFORMATION & SUPPORT

**Support** is available by calling **Medtronic** at **1-800-497-4968**.

Local support can be obtained by Medtronic Service staff through your normal communication channels.