

# TN EPC Utility for the N-GXE-POE-xx-01 NIC User Guide

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## Revision History

Date	Rev	Notes
11/11/15	A	Initial release for optional TN EPC Utility v1.0.5.
2/9/22	B	Initial Lantronix re-brand.

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## Safety Warnings and Cautions

These products are not intended for use in life support products where failure of a product could reasonably be expected to result in death or personal injury. Anyone using this product in such an application without express written consent of an officer of Lantronix does so at their own risk and agrees to fully indemnify Lantronix for any damages that may result from such use or sale. See the *N-GXE-POE-xx-01 NIC User Guide* for N-GXE-POE-xx-01 hardware details.

## Product Description

The N-GXE-POE-xx-01 Network Interface Card (NIC) provides connectivity to a secure fiber network while also delivering power to a PoE Powered Device (PD), such as a VoIP phone with a copper UTP interface. It fully complies with all IEEE 802.3z and 1000Base-SX standards, providing up to 1000 Mbps full-duplex bandwidth capacity per port.

The combined functions of PC connectivity and VoIP phone connectivity in one device saves installation time, expense, and the space of having two devices at the desktop. When VoIP traffic is filtered and prioritized by third-party devices like an Ethernet switch and IP phone, the N-GXE-POE-xx-01 will pass all tagged traffic, ensuring a high level of quality of service.

VLANs and Prioritization can be configured at the NIC using the Transition EPC (Ethernet Packet Controller) Utility as described in this manual. See the N-GXE-POE-xx-01 User Guide for NIC hardware details. This manual assumes that the NIC is successfully installed in a qualified PC and the NIC “primary” port is connected to the network (the fiber port is the default primary port). Note that the TN-EPC Utility can also be used to change the NIC “primary” port using the “Link Follow” option.

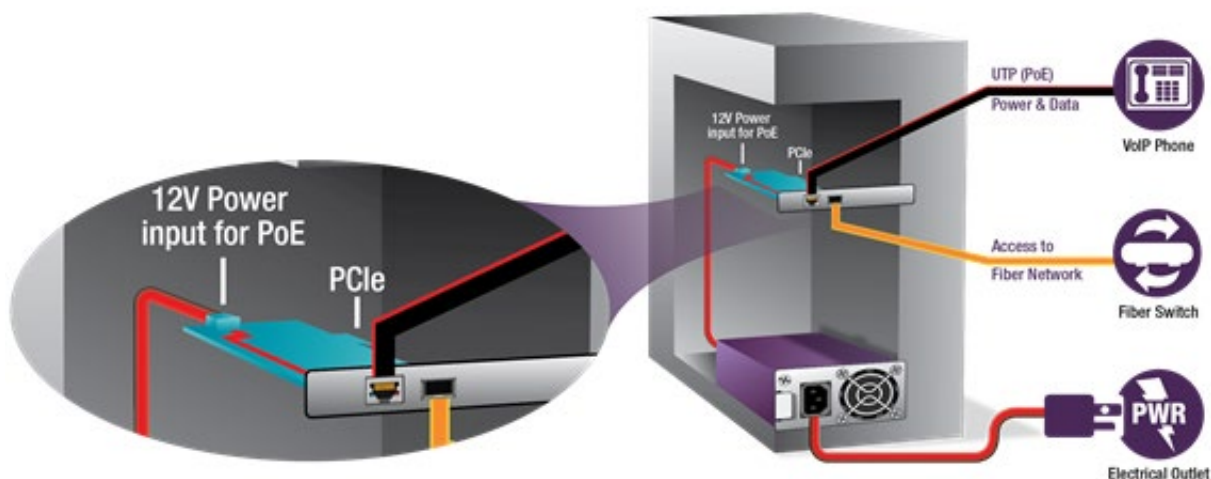
## Basic Application / Scenarios

The N-GXE-POE-xx-01 is installed in a PC to connect the PC to the Ethernet network through the fiber port, and connects a PD through the PoE copper (RJ-45) port. This turns a PC with the N-GXE-POE-xx-01 installed into a PSE device.

When you connect VoIP phones to your network PCs, you may separate voice traffic from data traffic using a VLAN, to ensure voice traffic has sufficient priority over data traffic. The TN-EPC Utility lets you assign a VLAN ID and Priority to the copper port. The default setting is no VLANs – pass frames as they are.

Note that the IP Phone system should be able to accept VLAN tagged packets.

Also note that you can use Windows’ Device Manager to access the Intel utility to set the VLAN ID for the PC; this will forward traffic to any port with the same VLAN ID.



## TN-EPC (Ethernet Packet Controller) Utility

The optional TN- EPC (Ethernet Packet Controller) Utility sends Ethernet frames from the NIC PC Port to the NIC external port controls. It is a separate utility that sends configuration data, allowing the external facing copper port to add a C-Tag with VLAN ID and Priority.

The TN EPC Utility can be used with the N-GXE-POE-xx-01 to manually insert C-Tags for improved priority of voice traffic leaving the outbound port. If the device attached to the PoE port does not automatically establish a unique VLAN in your network, this utility lets you set that VLAN ID and Priority. Be sure to verify with your Network Administrator what settings should be used. Valid **VLAN IDs** are 0-4095. Valid **Priority** settings are 0-7.

In the TN EPC Utility, "Load Defaults" means reset to original settings. Setting a VLAN ID or Priority will tag the phone with whatever is selected.

- Untagged frames from the host will have a VLAN tag inserted (VLAN 0 / Prio 1).
- Tagged frames from the host are sent unmodified.

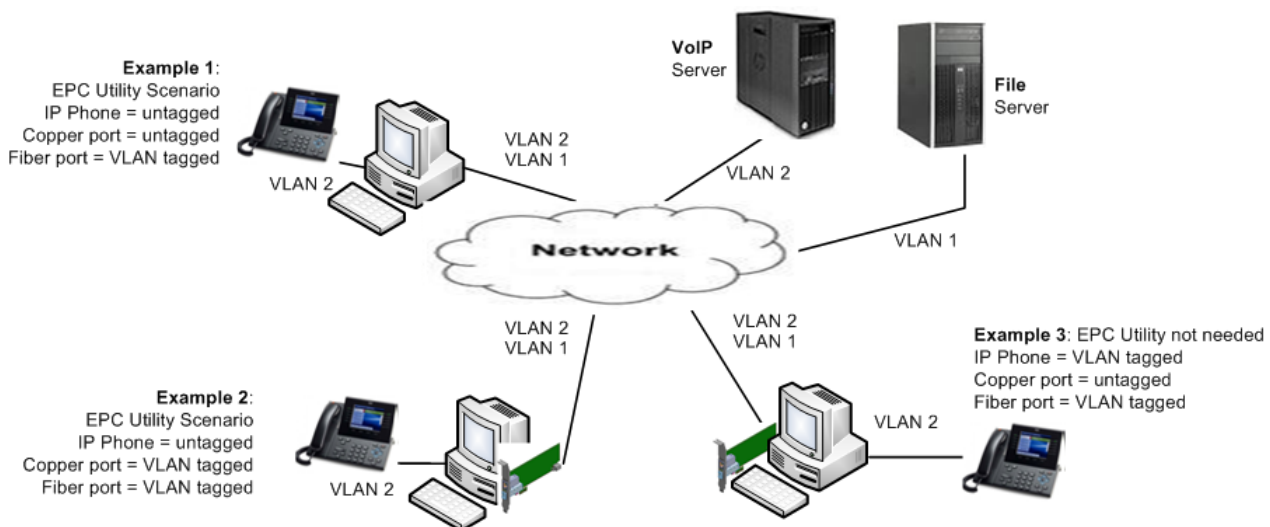
## When the TN EPC Utility is Required

The TN EPC Utility is required if the phone needs a VLAN tag to be added. The TN EPC Utility sets the desired VLAN/Priority. The N-GXE-POE-xx-01 will add a tag as a frame leaves the NIC. The tag is stripped on return back to the VoIP phone. Tagged host packets are transmitted unaltered. Untagged host packets are assigned VID=1, Pri=0. **Note:** Run the EPC Utility before enabling any host VLANs on the NIC.

See the *N-GXE-POE-xx-01 NIC User Guide*, 33599, for scenarios that do not require the TN EPC Utility.

## Application Example

The figure below shows a VoIP environment, with possible VLAN configurations (using the optional TN EPC Utility to send Ethernet frames to the switch).



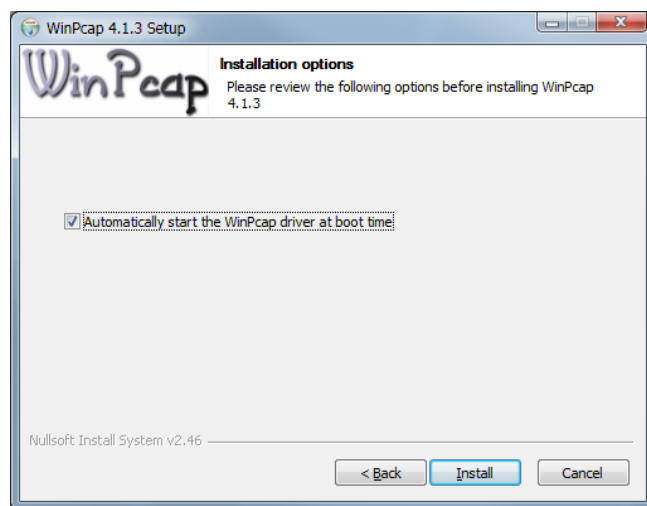
## Installation

### Install the WinPcap Library

WinPcap is a standard tool for link-layer network access in Windows environments. WinPcap must be installed in order for the TN EPC Utility to operate. The current WinPcap version is 4.1.3 and is available from <http://www.winpcap.org/install/default.htm>. The executable file installs WinPcap on your machine.

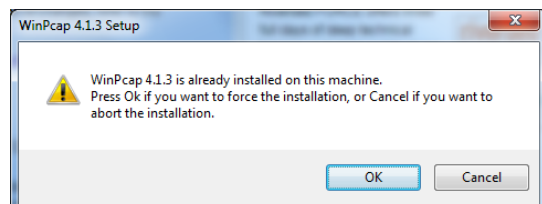
WinPcap can be installed before or after the TN EPC Utility, but the Utility will not run until WinPcap is installed. Without the WinPcap driver running, the TN EPC Utility cannot communicate with the N-GXE-POE-xx-01 NIC.

During the WinPcap install, the checkbox (*Automatically start the WinPcap driver at boot time*) in the screen below must be checked.



1. Download and run the WinPcap executable.
2. Follow the instructions on the screen. The installation applet will automatically detect the operating system and install the correct drivers.
3. The WinPcap-based applications are now ready to work.
4. To remove WinPcap from the system, go to the Control Panel, click on "Add/Remove programs" and then select "WinPcap".

**Messages:** *WinPcap 4.1.3 is already installed on this machine. Press OK if you want to force the installation, or cancel if you want to abort the installation.*

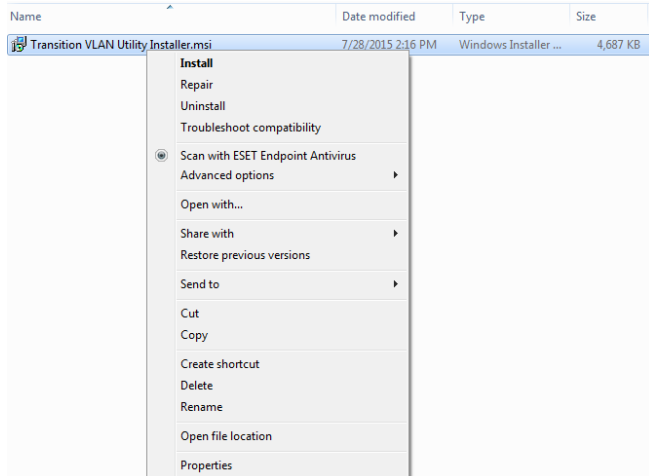


**Action:** If WinPcap was already successfully installed, click **Cancel** to quit the WinPcap install. Make sure that the installed WinPcap is running. If the TN EPC Utility install fails, then try re-installing WinPcap on your machine and click **OK** when this message displays.

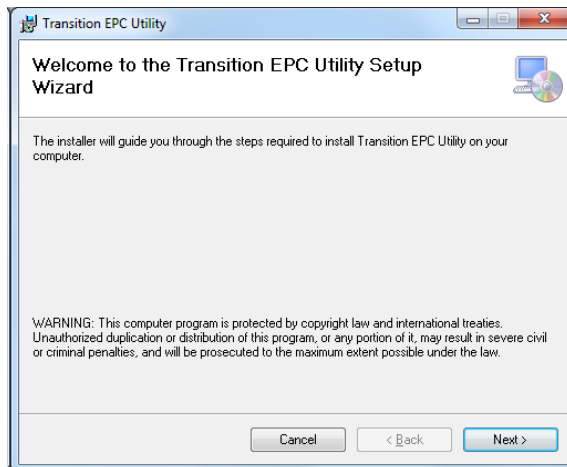
For WinPcap documentation see [www.winpcap.org/docs/docs\\_412/html/main.html](http://www.winpcap.org/docs/docs_412/html/main.html).

## Install the TN-EPC Utility (First Time Install)

1. Download and save the executable file.
2. At the saved location, double-click the *TN-EPC Utility Installer.msi* file or right-click and select **Install**.

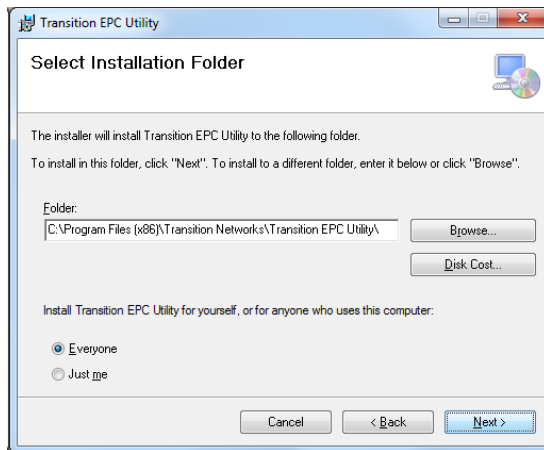


3. Select **Install** to display the *Welcome ...* screen.



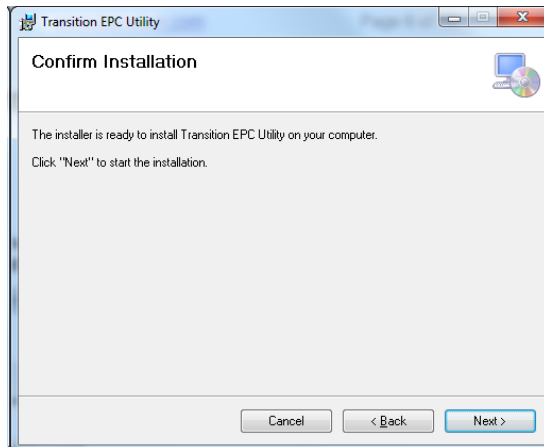
4. Click the **Next** button to display the Select Installation Folder screen.

- At the Select Installation folder screen, either click the **Next** button to install to the default folder, or click the **Browse...** button to browse to a different folder and select the desired folder location.

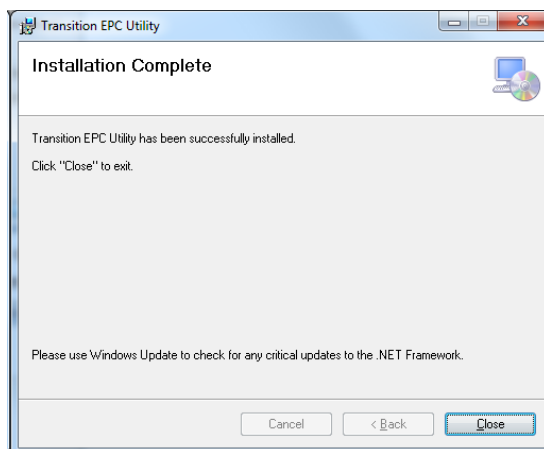


Depending on your OS, other options may display (e.g., Disk Cost, Install for Everyone / Just me).

- Click the **Next** button to display the Confirm Installation screen.



- Click the **Next** button to begin the install. If a Windows User Account Control dialog displays, click the **Yes** button to continue. The Installation Complete screen displays, indicating the utility has been successfully installed.



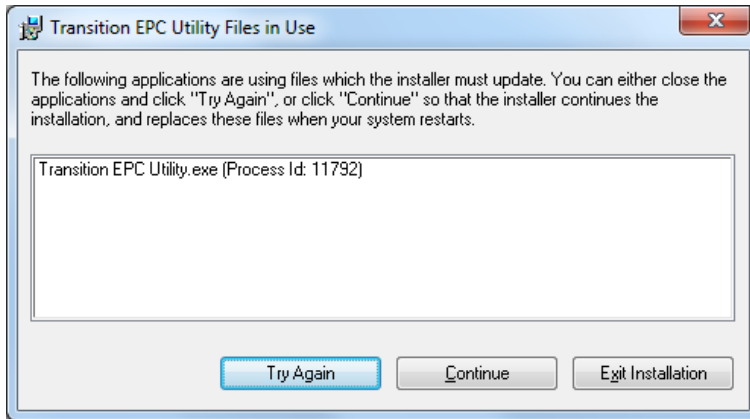
- Click the **Close** button to exit the installer. Continue to the Operation section below.



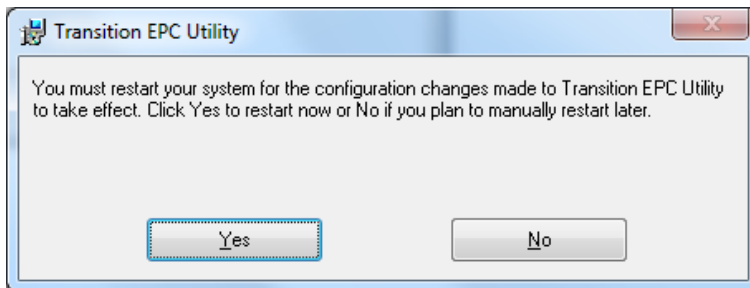
## Install Messages

**Message: TN-EPC Utility in Use**

The following applications are using files which the installer must update. You can either close the applications and click "Try Again", or click "Continue" so that the installer continues the installation, and replaces these files when your system restarts.



**Message:** You must restart your system for the configuration changes to be made to TN-EPC Utility to take effect. Click Yes to restart now or No if you plan to manually restart later.



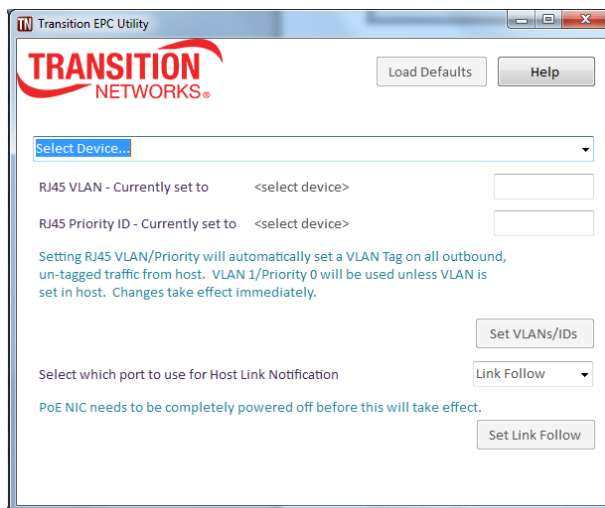
## Operation

You can click the **Help** button at any time to display online Help. You can also click the **Load Defaults** button to re-load the default settings (VID 1 and Priority 0). **Note:** The EPC utility requires a primary port network connection in order to work. By default the fiber/SFP port is the primary port. The overall process includes these steps:

- A. Launch the utility (required).
- B. Select a discovered device (required).
- C. Enter a valid VLAN and Priority ID (optional).
- D. Select the Port to use for Host Link Notification (Link Follow) (optional)

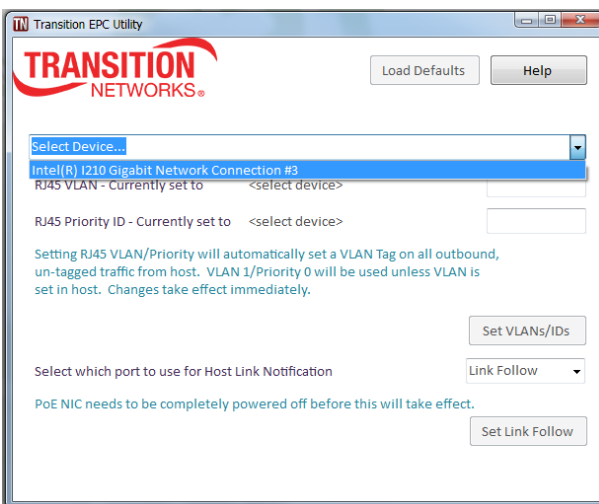
### Launch the Utility (Required)

1. To launch the utility, at the install location, double-click the “*TN-EPC Utility.exe*” file to display the *Select Device* screen (or navigate to Windows’ Start > All Programs > Transition Networks > TN-EPC Utility).



### Select a Discovered Device (Required)

2. At the Select Device... dropdown, select a discovered device. The N-GXE-POE-LC-01 displays as “*Intel® I210 Gigabit Network Connection #x*”.



## Enter a valid VLAN and Priority ID (Optional)

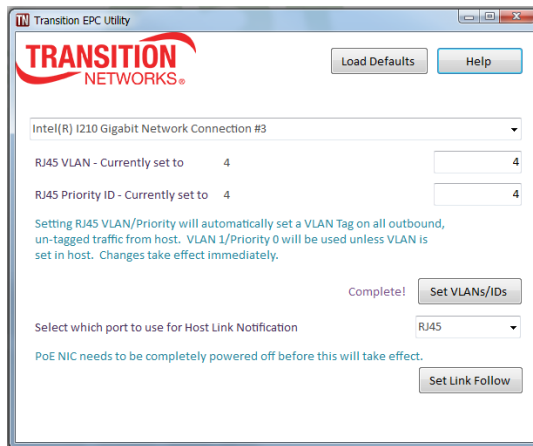
- Position the cursor in the entry fields and enter a valid value in each of the two fields:

**RJ45 VLAN – Currently set to <x>:** enter a valid (defined) VLAN ID from **0-4095**.

**RJ45 Priority ID – Currently set to <z>:** enter a valid (defined) Priority ID from **0-7**.

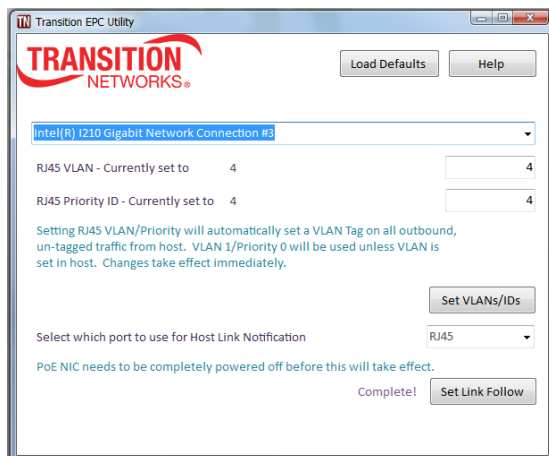
Setting RJ45 VLAN/Priority will automatically set a VLAN Tag on all outbound, un-tagged traffic from the host. VLAN 1/Priority 0 will be used unless the VLAN is set in the host. Changes take effect immediately. Note that other tagged traffic will override defaults.

- Click the **Set VLANs/IDs** button. Current status displays for about ten seconds, then **Complete!** displays next to the **Set VLANs/IDs** button when this step is successfully completed.



## Select Port to use for Host Link Notification (Link Follow) (Optional)

- At the **Link Follow** dropdown, select whichever port is displayed for use for Host Link Notification (**Fiber** or **RJ45**). The PoE NIC is shipped with the **Fiber/SFP** port selected. Select **RJ45** if you prefer to have the copper (RJ45) port used for Host Link Notification.
- Click the **Set Link Follow** button; the message **Complete!** displays next to the **Set Link Follow** button when the process is successfully completed.

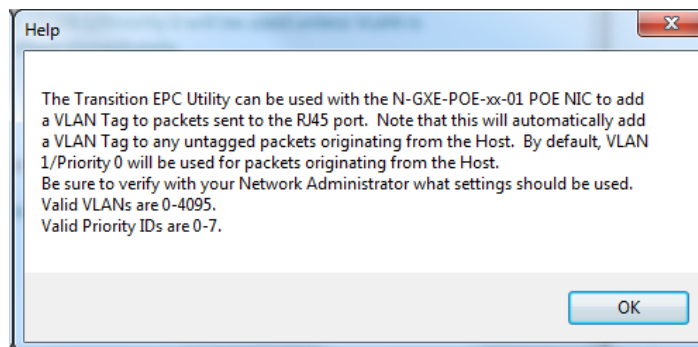


- Perform a complete power down of the PC and NIC. Recommend: Power Off the PC, remove the PC power cord, and press the PC power on/off button a few times.

## Notes on Operation

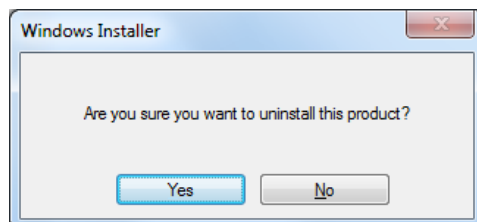
- The **Load Defaults** button just reloads the original factory defaults into the text box; it does not apply the default settings. The factory default settings are restored if/when you click the **Set VLANs/IDs** button.
- The **RJ45** settings cause the NIC to just tag the packets coming from the phone. Setting a VLAN ID or Priority will tag the phone with whatever is selected. Untagged frames from the host will have a VLAN tag inserted (VLAN 0 / Prio 1). Tagged frames from the host are sent unmodified. In other words: Setting RJ45 VLAN/Priority will automatically set a VLAN Tag on all outbound traffic from the fiber port. Untagged traffic from the host PC will also be assigned a Default VLAN tag with VLAN 1 and Priority 0. If packets are tagged by the PC they will override the default VLAN 1/ Priority 0.
- **Host Link Notification** (Link Follow): When the NIC initially ships, the link status the NIC reports to the host OS is the Fiber Port's link status. EPC 1.0.6 allows the user to tell the NIC to use the RJ45 or the Fiber Port's link status when reporting to the Host OS. The EPC Utility itself requires a valid link to function so initially the Fiber port must be connected to use EPC but then you can set which port to use.

## Help Button



## Uninstall the TN-EPC Utility

1. At the saved location, right-click the *Transition EPC Installer.msi* file and select **Uninstall**.

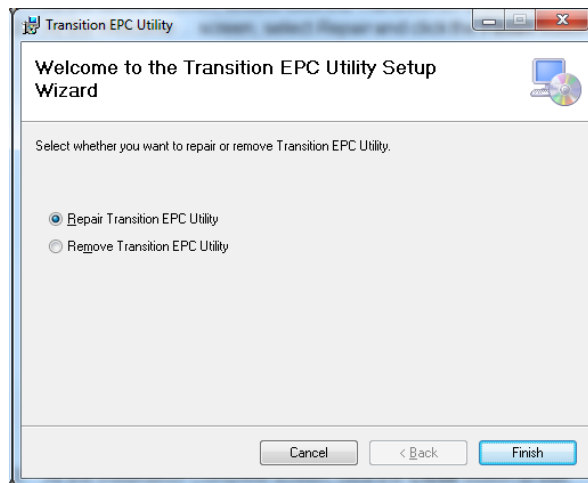


2. At the confirmation prompt, click the **Yes** button if you are sure you want to uninstall the utility; otherwise click the **No** button and continue.

## Repair the TN-EPC Utility

If you start the install process with an existing version of the TN-EPC Utility installed, you are presented with the options to either **Repair** or **Remove** the utility. Selecting **Repair** overwrites the existing utility version as described below.

1. At the saved location, double-click the *Transition EPC Installer.msi* file.
2. At the Welcome ... screen, select the **Repair TN-EPC Utility** radio button and click the **Finish** button.

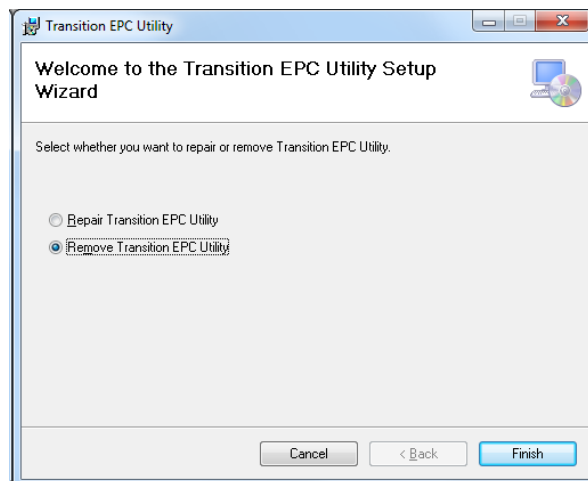


3. At the *Installation Complete* screen, click the **Finish** button to repair (update) the utility version and exit the installer.

## Remove the TN-EPC Utility

If you start the install process with an existing version of the TN-EPC Utility installed, you are presented with the options to **Repair** or **Remove** the utility. Selecting **Remove** deletes the existing Utility and re-installs this new version, as described below.

1. At the saved location, double-click the *Transition EPC Installer.msi* file.
2. At the Welcome ... screen, select the **Remove TN-EPC Utility** radio button and click the **Finish** button.



3. At the *Installation Complete* screen, click the **Finish** button to remove the utility and exit the installer.

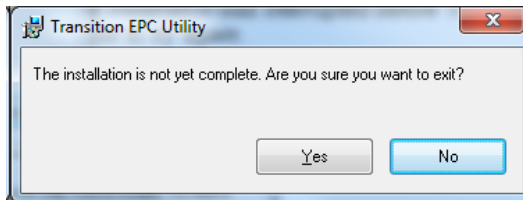
## Operation Messages

**Message:** User Account Control Do you want to allow ...

**Meaning:** Windows UAC message.

**Recovery:** None. Click the **Yes** button to allow the utility to make changes to your computer.

**Message:** The installation is not yet complete. Are you sure you want to continue?



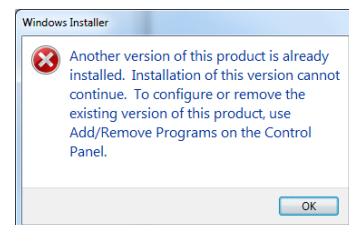
**Meaning:** You clicked the **Cancel** button during the install process.

**Recovery:** Click the **Yes** button only if you are sure you want to exit the install; otherwise click the **No** button and continue.

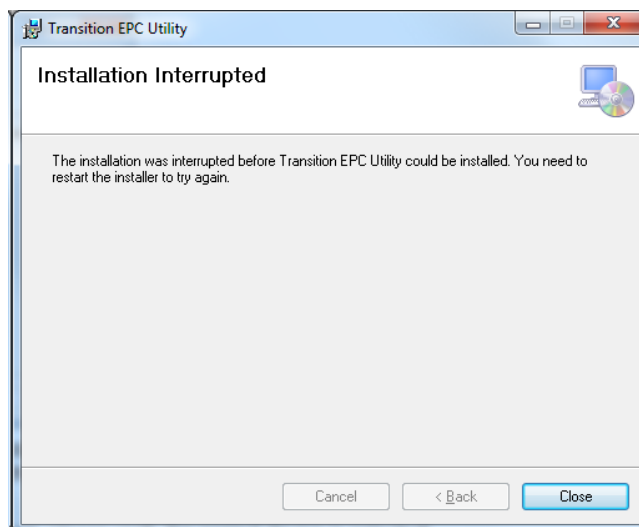
**Message:** Another version of this product is already installed.

**Meaning:** Installation of this version cannot continue.

**Recovery:** To configure or remove the existing version of this product, use Add/Remove Programs on the Control panel.



**Message:** Installation Interrupted The installation was interrupted before Transition EPC could be installed. You need to restart the installer to try again.



**Meaning:** You clicked the **No** button at the Windows UAC message during the install process.

**Recovery:** Click the **Close** button and start the TN-EPC Utility install process again.

**Message:** Failed to communicate with device, please verify the correct device is selected!

**Meaning:** An error occurred during TN-EPC Utility operation.

**Recovery:** Make sure the fiber port is connected to a link partner.

**Message: Invalid Priority ID!** displays in red text if you entered a Priority ID other than 0-7. Re-enter a valid entry.

**Message: Invalid VLAN!** displays in red text if you entered a VLAN ID other than 0-4095. Re-enter a valid entry.

**Message: Valid Device not selected!** displays in red text if you did not select a device at the **Select Device ...** dropdown. Select a discovered device from the dropdown. If no device was discovered, refer to the [Troubleshooting](#) section of this manual.

The screenshot shows the TN EPC Utility window with the following elements:

- RJ45 VLAN - Currently set to**: A dropdown menu showing "<select device>".
- Invalid VLAN!**: A red error message next to the VLAN dropdown.
- RJ45 Priority ID - Currently set to**: A dropdown menu showing "<select device>".
- Invalid Priority ID!**: A red error message next to the Priority ID dropdown.
- Setting RJ45 VLAN/Priority will automatically set a VLAN Tag on all outbound, un-tagged traffic from host. VLAN 1/Priority 0 will be used unless VLAN is set in host. Changes take effect immediately.**: A blue informational message.

**Message: TN-EPC Utility (Not Responding)!** Displays if the attempted process halts. Verify the related procedure, re-try the previous step, and continue operation.

**Message: Device not found, please verify winpcap is installed and restart!** displays in red text if WinPcap is not yet installed.

**Message: Failed to store RJ45 settings...** displays if the RJ-45 setting were incorrect, or if the host lost connection to the NIC. Try rebooting the PC once or twice.

**Problem:** Using the EPC Utility when host VLANs are enabled on the NIC via the Intel Device Manager.

Trying to start the utility in this scenario results in a *"Device not Found"* error message (below left). Winpcap was already installed and forcing a re-install resulted in the message *"Unable to contact device"* (below right).

**Messages:** *Device not Found. please verify winpcap is installed and restart.*

*Unable to contact device, verify link is up.*

**Meaning:** In Windows 10, there is a known issue with the Intel Device Manager. VLANs created by the Device Manager do not pass traffic. Nothing in the EPC Utility can fix this issue. The EPC Utility manages the switch chip on the PoE NIC through the Intel i210 chip.

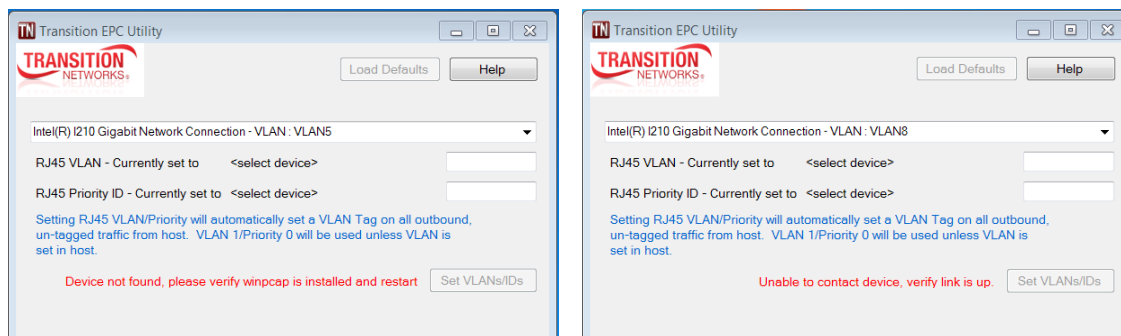
**Recovery:**

1. Run the EPC Utility before enabling any host VLANs on the NIC. In this scenario, everything works as expected.

2. Check for updated firmware; a fix should be available in a future release.

3. For Windows 7 check the Intel website. Check the Intel Support Home Drivers & Software at <http://www.intel.com/content/www/us/en/support/network-and-i-o/ethernet-products/000005686.html>

Learn about Intel® PROSet Software and How to Access It at <https://downloadcenter.intel.com/>.



## Troubleshooting

### Troubleshooting Checklist

This section provides basic TN EPC Utility troubleshooting procedures. See the *N-GXE-POE-xx-01 User Guide* for N-GXE-POE-xx-01 NIC troubleshooting.

1. Verify that the link partner is active and can send/receive traffic; make sure partner settings match; verify that the port is enabled; try connecting to another port or link partner.
2. Run the PC diagnostics (e.g., i210 driver diagnostics).
3. Try the troubleshooting procedures in the NIC User Guide.
4. Record any specific error condition. See [“Recording Model and System Information”](#) in the NIC User Guide.
5. During PC boot up, if an error displays indicating a problem with the LAN adapter’s NVM configuration, ignore it. This is related to the PXE option ROM not being implemented and will not cause functional issues.
6. Record your PoE NIC and TN EPC Utility information. See [Record Model and System Information](#) below.
7. Contact Tech Support.

### Record Model and System Information

Please record the following information before calling Lantronix Tech Support:

N-GXE-POE-XX-01 SN and version: \_\_\_\_\_

TN EPC Utility version: \_\_\_\_\_

TN EPC Utility VLAN settings/driver VLAN settings: \_\_\_\_\_

PC Make and model: \_\_\_\_\_

PC OS and version: \_\_\_\_\_

IP phone make/model: \_\_\_\_\_

Can IP phone tag voice traffic and assign VLAN ID/priority? \_\_\_\_\_

Intel i210 driver version: \_\_\_\_\_



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