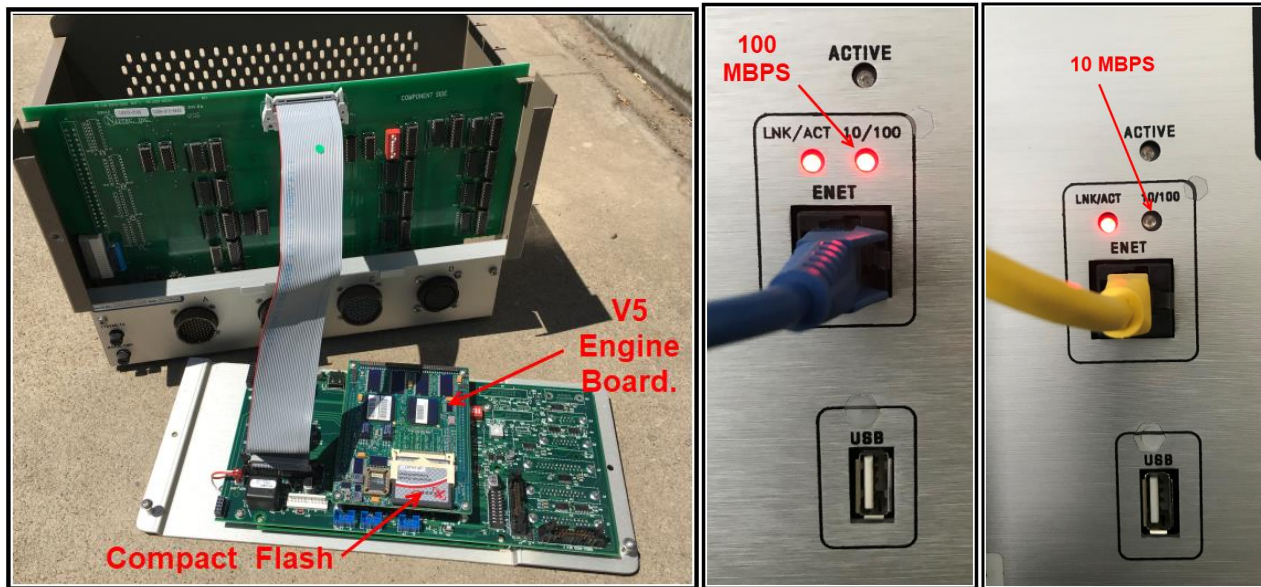


## Tech Note 1019 – Setting up an ATC V5 Engine Board to run 10 MBPS.

The purpose of this Tech Note is to assist the user in running a script setting up an ATC controller with a V76 version 5 Host/Engine Board to limit the Ethernet speed to 10 Megabits per second (MBPS).



### Background



By specification, ATC's with V5 engine boards, which were manufactured prior to 2019, are normally set to communicate with an ethernet speed of 100 MBPS and work with modern network equipment. However, these boards can also be run at 10 MBPS for older network equipment. 10 MBPS will slow down communications and should have no measurable impact on communications to the ATMS central software.

On occasion, an agency may have network issues or unmanaged switches which can be adversely impacted by Layer 2 loop issues created by network (broadcast) storms. A broadcast storm is an abnormally high number of broadcast packets within a short period of time. A broadcast storm can overwhelm unmanaged switches and endpoints as they struggle to keep up with processing the flood of packets. When this happens, network performance degrades. Although this is very rare and **has been resolved in the hardware of ATC Version 6 engine boards**, Trafficware has provided a way to "slow down" the transmission of packets to Version 5 ATC engine boards to a rate of 10 MBPS that will avoid this issue.

Setting the Ethernet Link speed to 10 MBPS will address an issue in the Linux kernel used by V5 engine boards, whereby a packet flood caused by a link loopback will cause the kernel to freeze. When the link speed is reduced to 10Mb/s, the kernel will no longer freeze under these circumstances.

## Installation of the V5 Engine Board software patch

- 1) Verify the ATC has a Version 5 engine board. This can be done by removing the top of the controller and checking if it has a SRAM card as shown on the previous page.
- 2) An alternate way is to connect a PC Telnet into the controller or access it via a serial console cable & terminal software. Once accessed, running a Ver command will tell you the version of the engine board that you have. If you have issues, please contact your Trafficware representative.
- 3) Your Trafficware representative will provide a patch using a zipped file named:  
eth-link-speed-patch.zip
- 4) Unzip this file and there will be 2 files shown below.

 eth-link-speed-patch	7/15/2020 10:25 AM	File	2 KB
 eth-link-speed-patch-README.txt	7/15/2020 10:36 AM	Text Document	2 KB

- 5) Copy the file eth-link-speed patch to patch" into the root directory of a USB flash drive that is readable by a controller.
- 6) Insert the USB drive into the controller with the V5 Engine board
- 7) Telnet into the Controller or access it via a serial console cable & terminal software.
- 8) From the command prompt, type the following command, and then hit enter.  
**/media/sda1/eth-link-speed-patch**
- 9) This will run the patch in the background while the controller is still running. If this patch is mistakenly run on a V6 Engine Board, an error message will occur and the patch will not run.
- 10) Within 5 seconds you should see the Prompt again. Once it is complete, you can remove the USB drive.

This patch can be made while a controller is running an intersection. The patch should not interfere with the controller's operation in any way. The controller is **not** rebooted by this patch. Upon applying the patch, the link speed will immediately be reduced to 10Mb/s, and the change will be persistent on all future reboots.

- 11) As an added precaution, there is a programming parameter in a V76 controller that should be changed. Below is its description:

<b>SDLC Retry Time</b>
<i>SDLC Retry Time</i> (0- 255 minutes) is a countdown timer initiated by a critical SDLC fault that determines how the controller recovers from SDLC communication errors.
<ol style="list-style-type: none"><li>1) If the <i>SDLC Retry Time</i> is zero, a critical SDLC fault is latched by the controller until AC power is cycled or the fault is cleared manually by an operator using keystrokes MM-&gt;8-&gt;7.</li><li>2) If the <i>SDLC Retry Time</i> is not zero, a critical SDLC fault holds the controller in the fault mode until proper SDLC communication is restored. Once SDLC communication is restored, the SDLC Retry Time continues to count down and test successive faults as shown below. The first two SDLC communication faults allow the controller to recover once the communications is restored. However, if a third fault occurs before the <i>SDLC Retry Time</i> expires, a critical SDLC fault is latched by the controller until AC power is cycled or the fault is cleared manually by an operator using keystrokes MM-&gt;8-&gt;7.</li></ol>

- 12) Change “**SDLC Retry Time**” from the default of 0 to 10 (minutes). This option is called “**RetryTime**” under **Controller/SDLC/Parms, MM-1-3-2** on v76. This change can be also implemented via ATMS.

## Summary

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Slowing down Network speed on a V5 ATC engine board will mitigate network issues.