



# Connecting Traffic Cabinets with 2-Wire Cabling using VDSL2

Location  
**Midwest (USA)**

Industry  
**Intelligent Transportation Systems**

Application  
**Multiple**

Products Used  
**IVC-4011-T-V2**  
**LMP-1002G-SFP-T**

## BACKGROUND

Traffic signal communication systems have been installed over decades and are comprised of fiber optic lines, copper wire, dial up modems and wireless devices. When contacted by the Traffic Engineers to help bring Ethernet connectivity to traffic cabinets that were not on their fiber network, it was explained that existing cabling is in place, however it consisted of 2-wire cable previously used for analog dial-up modems.

After a recent project bid for installing fiber optics to replace the 2-wire cabling, it was found that the trenching and installation of the new cabling project would be an estimated \$500,000 between two intersections which was outside of their budget.

The Traffic Engineers were interested in finding a way to connect the 2-wire cabling to some type of device that would provide 10/100Tx Ethernet between traffic cabinets at four intersections and to connect the three cabinets data through an existing fiber line at the fourth cabinet.

## THE CHALLENGE

With dial-up communications, it is not possible to maintain a 24-hour access which makes the system limited for today's technology advancements, such as real time monitoring, data logging, central based control operations, and the ability to manually adjust the controller.

Existing cabling conditions with 2-wire cabling caused a challenge since Ethernet cabling is typically fiber for the long distance between cabinets. The challenge is how to use the existing 2-wire cable to interconnect two different intersections with a reliable Ethernet.

The Traffic Engineers turned to Antaira to help design a system architecture to

accommodate available traffic communication systems and related ITS elements without the cost constraints of trenching to install new fiber lines.

## THE SOLUTION

Antaira introduces IVC-4011-T-V2 VDSL2 that is capable of bridging Ethernet over 2-wire cabling up to 3937 feet (0.75 miles, 1.2 kilometers) and provides up to 100Mbps Ethernet communications between two VDSL2 units installed inside of traffic cabinets in ideal conditions. When connecting between two cabinets, it was decided that a managed switch would be a best fit to provide access to connected devices and more control over the network traffic. Cabinets B and C in the following diagram have two VDSL2 units with one unit acting as CO (central office) and the other as CPE (customer premise) for data transmission.

Once connected, the 2-wire cable now acts as a network link and provides the traffic engineers with up to 100Mbps data link to access the changeable message signs, CCTV IP Camera video, update traffic signal timing and coordination, monitoring of ITS device communications. The team is now able to gather regular performance metrics that are being produced using the collection of data from ITS Field devices.

Emergency vehicle Preemption Systems, transit system priority operations, adaptive signal control, monitoring the status of traffic controllers are all possible with the VDSL2 bridging the communications gap between traffic cabinets at intersections. The main fiber line connects these traffic cabinets to the Traffic Management Center.

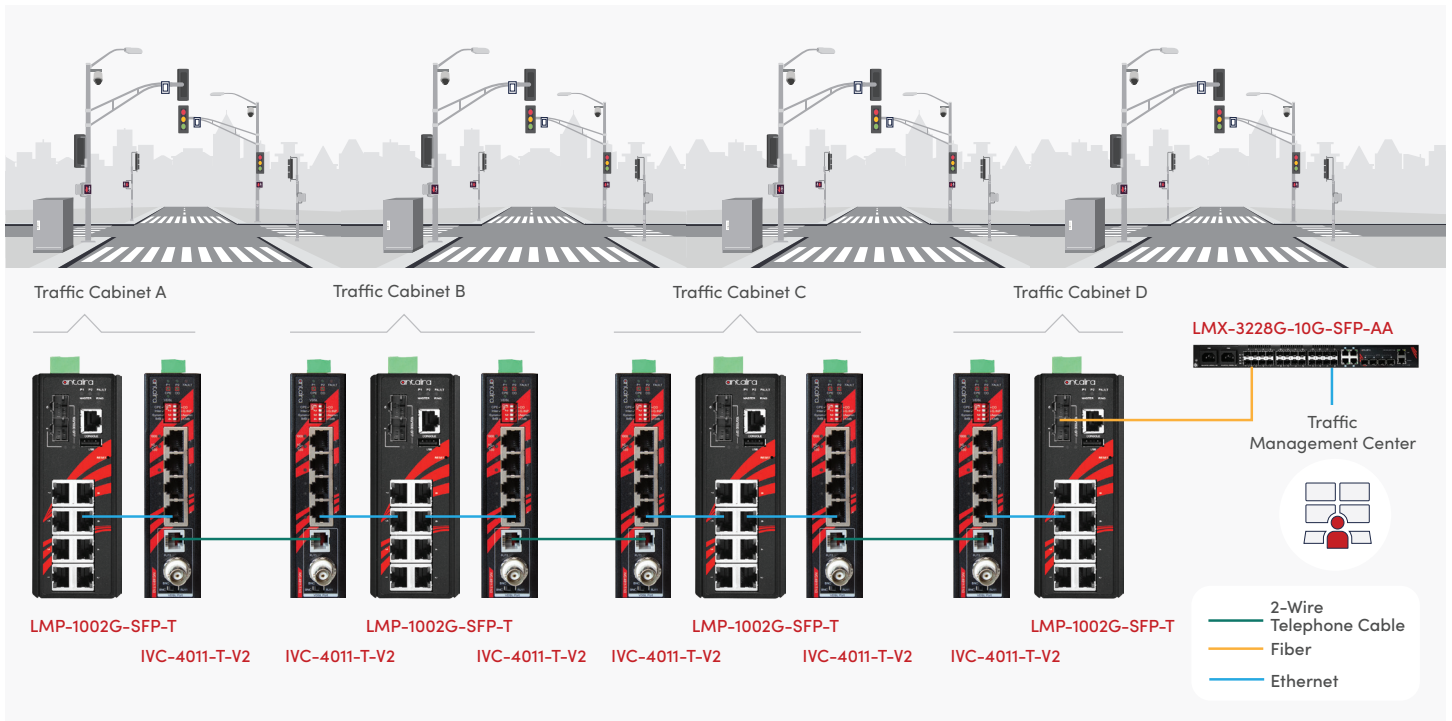


Diagram 1. VDSL2 connections between traffic cabinets



### IVC-4011-T-V2

#### 5-Port Industrial Ethernet Extender over VDSL2, 4\*10/100/1000Tx and 1\*RJ11 / BNC

- Ruggedly engineered for indoor and outdoor installations
- Housed in IP30-Rated Metal Enclosure
- High level of immunity to electromagnetic interference, supporting 6000 VDC Ethernet ESD protection
- Extended Operating Temperature: -40° to 167°F (-40° to 75°C)
- Five-Year Warranty



### LMP-1002G-SFP-T

#### 10-Port Industrial PoE+ Light Layer 3 Managed Ethernet Switch

- 8\*10/100/1000Tx (30W/port) + 2\*100/1000 SFP Slots
- PoE Power Budget: 240W at 48~55VDC Input Voltage
- Network Redundancy Support: STP/RSTP/MSTP, G.8032 ERPS
- Extended Operating Temperature: -40° to 167°F (-40° to 75°C)
- Five-Year Warranty

## WHY ANTAIRA

Antaira's commitment is to exceed its customer's expectations by offering high quality industrial Ethernet products and outstanding support services. Antaira has demonstrated its capability of delivering comprehensive network solutions that ensure the fulfillment of security, scalability, and redundancy demands for any critical application.

## ABOUT ANTAIRA

Antaira Technologies is a leading developer and manufacturer that provides high-quality industrial networking and communication product solutions. Since 2005, Antaira has offered a full spectrum of product lines that feature reliable Ethernet infrastructures, extended temperature tolerance, and rugged enclosure designs. Our product lines range from industrial Ethernet Switches, industrial wireless devices, Ethernet media converters, and serial communication devices. Our vast professional experience allows us to deploy a wide array of products worldwide in mission-critical applications across various markets, such as, automation, transportation, security, oil & gas, power/utility, and medical. Antaira is ISO9001 certified.

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