

Cost Savings with Ethernet Extenders

Data communication demands are rapidly increasing. Wireless communications and Internet of Things (IoT) applications are expected to grow exponentially, driven by the number of connected machines, wearables, mobile video and other growing applications on smart phones, tablets and 2-in-1s. Our communication devices have become so essential that enterprises are adopting BYOD (Bring Your Own Device) policies, creating challenges for the service providers and IT managers to fulfill customer expectations for ubiquitous coverage and ensure adequate capacity for bandwidth hungry applications. These demands will necessitate the addition of more wireless access points, IoT gateways and connected machines, putting a strain on the wired network to backhaul and connect an ever increasing number of network devices. Rather than incurring the expense of a network re-build or overbuild, service providers and IT managers have new options to use existing assets such as RG-style coax or 2-wire phone line that has been abandoned with the addition of digital security cameras and IP phones. Conversion technologies like those provided by Transition Networks enable operators to utilize existing assets, bringing savings of more than 40% and improving time to service.

Traditional Cabling

When we think of Ethernet networking, CATx cable is the default wired networking standard. Ethernet and CATx are often thought of as being reliant upon each other. Standards have followed to define the delivery of power along with Ethernet over CATx infrastructure. Emerging innovations have allowed for Ethernet and PoE devices to be connected via alternative infrastructures such as RG-style coax and 2-wire phone line. In greenfield applications, CATx environments are superior. In brownfields, however, utilizing the existing infrastructure certainly saves capital investment and more importantly speeds up time to service.

When planning the addition of new network devices or evolving to new technologies, considerable thought must be given to how they will interconnect to the wide-area network for management, control, computing or storage needs. Pulling new CATx cable from the core network to the device requires the following steps:

1. Plan the cable run: Can existing conduits support the addition of new cables, considering space, weight, and the ability to pull new cable? If existing conduits are insufficient to support new cable, where and how can new

- conduits be deployed? Are the walls solid or hollow? Is the ceiling open or closed? Are there asbestos issues?
2. Assess the need for edge switching and power: Do the runs exceed 100m? If so, is there space to add edge switching and/or PoE injectors to deliver data networking and power to the devices?
 3. Purchase new cable: Does the budget support an investment in new cable? Does the schedule allow it?
 4. Pull/lay the new cable: Assume there will be some challenges not discovered in the planning stage. Are the records available? Have there been any undocumented changes in the environment over time? Are the required areas easily accessible?
 5. Test: New cable and connections must be tested to ensure functionality. Has the proper bend radius been maintained? Has new stress been added when the cable was pulled into existing conduit? Have connections been done properly?
 6. Removal of abandoned cable: NEC codes require that unused cables must be removed. Has removal and disposal of abandoned cable been factored in to project costs?

Beyond just the cost of the cable, pulling new cable in a brownfield environment introduces many more costs and risks than working with a known infrastructure.

Utilizing Alternative Cabling Infrastructure

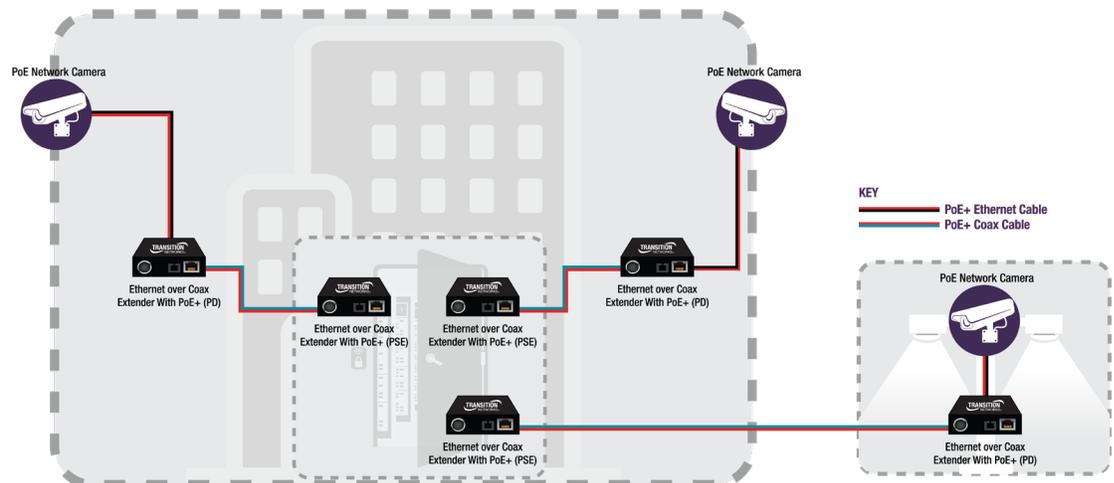
Technologies such as Transition Networks Ethernet-over-Alternative Cable Type solutions enable the use of existing RG-style coax or 2-wire/phone line to deliver Ethernet and power to edge devices. Transition Networks solutions work in tandem to interface with an Ethernet backbone while connecting the edge device via alternative mediums and delivering standard Ethernet and PoE. This solution eliminates the need for CATx cable between the Ethernet core and the edge device while delivering industry standard services. Simply connecting the Transition Networks devices to the Ethernet equipment and existing infrastructure eliminates the need for extensive planning, purchasing new cable, pulling new cables and the associated risks of undocumented challenges or unforeseen installation risks. Conservative estimates indicate that service providers can achieve significant savings by using existing infrastructure as opposed to running new cabling and reduce time to service as well.

Illustration of Savings with Use of Ethernet Extenders and Existing Cabling

Below is an example of the savings that can be achieved using existing infrastructure in conjunction with Transition Networks' products.

The customer has existing analog security cameras at the building egress, shipping/receiving docks and parking lot networked with RG-style coax cable. Because of advancements in quality, networking and storage, the customer would like to replace the cameras with IP based digital cameras. Since the existing cameras were networked with coax, traditional methods would require pulling new CATx cable to connect the cameras to the wide-area network for management, control and storage. By using the Transition Networks Ethernet-over-Coax solution rather than pulling new cable, the customer is able to use the existing RG-style coax cable to connect the digital cameras to the wide-area network. There is no need to plan for new cable runs, no new cable to purchase, no edge switching or injectors required, and no abandoned cable to remove and dispose. The customer achieves more than 40% savings, with additional savings in opportunity cost and reduced time to service.

Customer Application



Reduce time to service and save over 40% vs. pulling new cables

Steps Required	New Cable Installation	Transition Networks Extenders
Planning	\$\$	\$
Cable routes	↓	-
Duct availability	↓	-
Calculate duct load/fit	↓	-
Calculate Length	↓	↓
PoE Injector/Switch	\$\$	Included
Ethernet Extender	-	\$
Purchasing New Cable	\$\$\$ ↓	-
Laying New Cable	\$\$\$ ↓ ↓ ↓	-
Cutting/Crimping/Connecting	\$\$\$ ↓ ↓ ↓	-
Network Testing & Validation	\$\$ ↓ ↓	\$ ↓
Removal of Abandoned Cable	\$\$\$ ↓ ↓	-