AN

Application Note

Deploying IP Devices Using Alternative Cabling Types

Introduction

The ability to use existing cabling to deploy IP devices lowers cost, accelerates deployment, and solves a common problem when deploying devices where CAT5/6 cable or power sources are not readily available. In many cases it isn't feasible or is cost prohibitive to run new CAT5/6 cabling or hire electricians to run power to the desired locations. Transition Networks Ethernet extension solutions allow Ethernet networks to be extended over existing alternative cabling, such as coax or twisted pair infrastructure, at near gigabit speeds and use Power-over-Ethernet (PoE), depending on the solution chosen.

Benefits

Re-utilizing existing cabling is an attractive alternative to upgrading to a new, higher category unshielded twisted pair (UTP) cable or installing new fiber cable. It eliminates the high cost of planning, purchasing, trenching and cable pulling as well as minimizes deployment time by avoiding the unexpected delays associated with new installation. The cost and time savings provide for faster, more cost-effective deployment of services.

Applications

Existing cabling, such as coax, 2-wire or lower grade UTP, can be used to extend networks within or between buildings or upgrade networks from analog to IP devices. Some common applications include:

- Service provider installations or upgrades to connect and power wireless access points at campgrounds and marinas
- Intelligent transportation applications, using IP to control and direct traffic or connect security and surveillance devices
- Connect or extend networks between multiple buildings in a corporate, education, or military campus environment
- Re-use abandoned phone lines to upgrade telephony networks incorporating VoIP phones
- Provide additional bandwidth for enhanced services in existing networks
- Extend Ethernet and power to an outbuilding or guard shack to enable remote IP phones or security cameras
- Migrate older analog security and surveillance networks to newer, more functional IP cameras

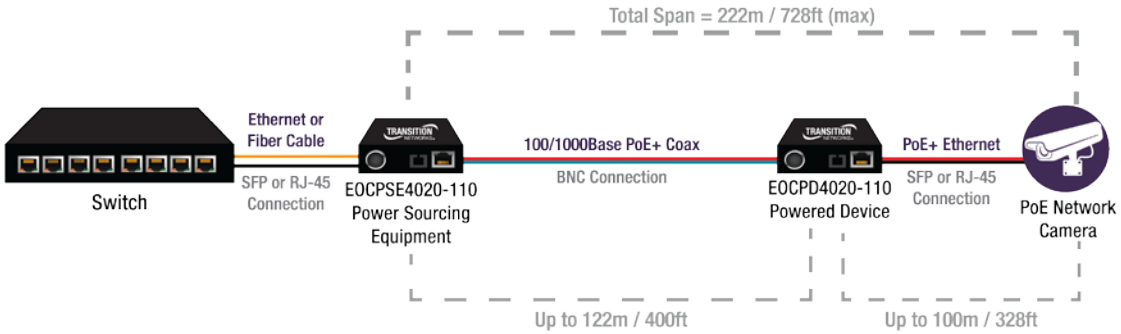
- Use existing in-building coax cable for connecting Ethernet devices to provide additional bandwidth for advanced services

Solutions

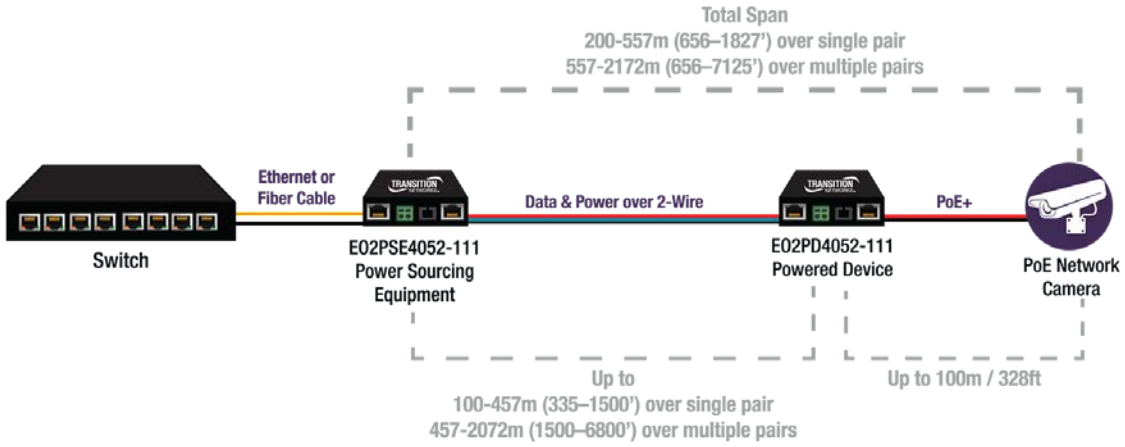
Solutions for Data and Power Extension with PoE

Transition Networks' Ethernet Extender solutions provide near gigabit connectivity over coax or 2-wire cabling. They are book-end solutions, consisting of Local and Remote units. The Local Unit connects to the local network via either copper or fiber cabling and then through either a coax or 2-wire connector (depending on model), extends the data connection along with power over the coax or 2-wire cable to the Remote Unit. The Remote Unit is powered via power received from the Local Unit, and in turn provides a 25.5 Watt PoE+ RJ-45 Ethernet port to connect and power an end device, such as a PoE-powered switch or camera.

Example Deployment of Ethernet over Coax using PoE



Example Deployment of Ethernet over 2-Wire using PoE

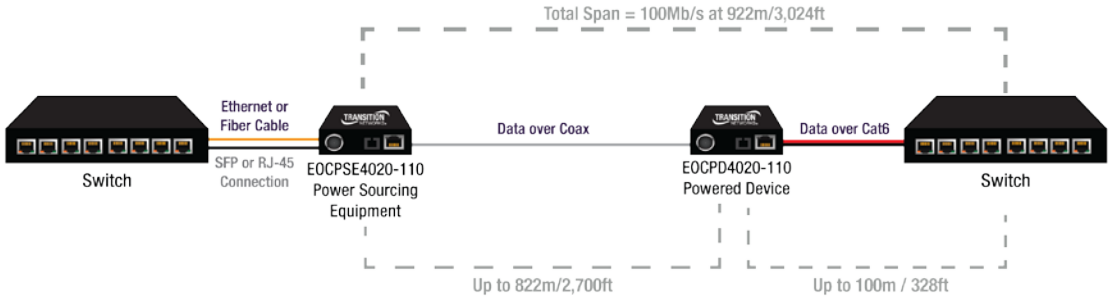


Note: Example distances dependent on cable type.

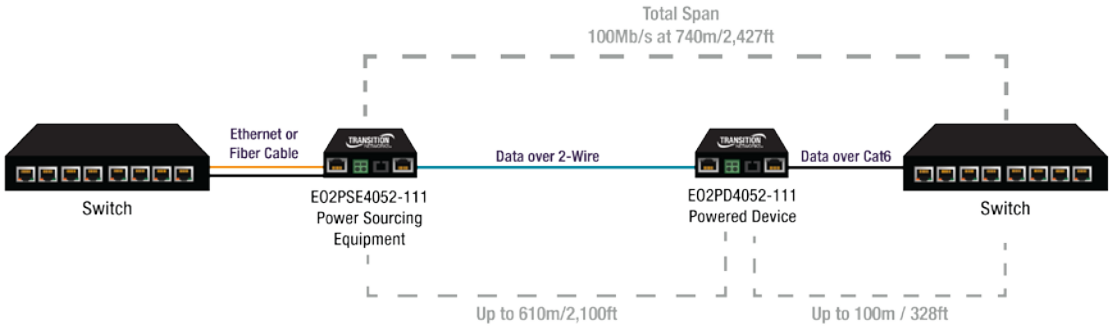
Solution for Data Extension Only

Transition Networks' Ethernet Extenders with PoE+ can also be used without PoE for data extension only in applications where power is already available. In addition, Transition Networks offers SFP Ethernet Extender modules that can extend your network at speeds up to 200 Mbps over 2-wire cabling or up to 300 Mbps over coax using VDSL2 technology. The SFP extender solution consists of a local end SFP and a remote end SFP. The local SFP extender connects into an available SFP port in your network and then through a 2-wire or BNC connector extends the data connection over a 2-wire or coax cable to the remote SFP extender installed in a network device at the remote end.

Example Deployment of Ethernet over Coax

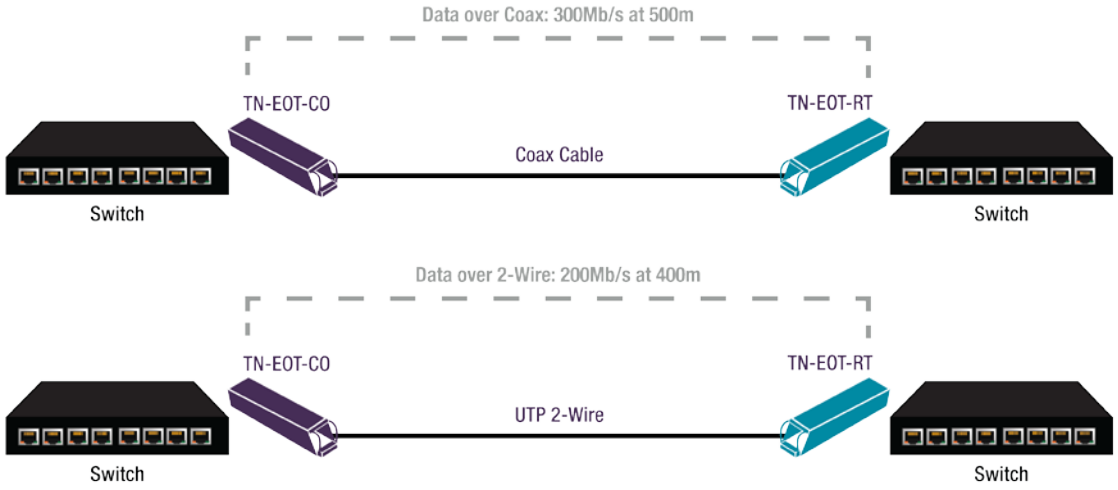


Example Deployment of Ethernet over 2-Wire



Note: Example distances dependent on cable type.

Example Deployment of SFP Ethernet Extension over Coax or 2-Wire



Ethernet Extension Products

- **Ethernet Over Coax Extender With PoE+**
  - EOCPSE4020-110 & EOCPD4020-110
- **Ethernet Over 2-Wire Extender With PoE+**
  - EO2PSE4052-111 & EO2PD4052-111
- **Ethernet Over 2-Wire / Coax Gigabit Ethernet SFP Extender**
  - TN-EOT-CO & TN-EOT-RT

Considerations

Both the Ethernet Extenders with PoE+ and the SFP Ethernet Extender solutions will allow you to extend your Ethernet network over alternative cabling. If PoE is required, the Ethernet Extender Over 2-Wire or Coax With PoE+ solutions are the ideal choice. If PoE is not required, either the Ethernet Extenders with PoE+ or the SFP Extender solution could be used. However the Ethernet Extenders with PoE+ will enable higher bandwidth.

Prior to deployment, the type, length, and condition of the existing cable run needs to be considered in order to ensure that sufficient line speeds can be achieved and adequate PoE power is delivered to the end network device.

Summary

Transition Networks' Ethernet Extenders allow for quick deployment of IP devices and services. These easily deployed solutions far exceed typical Ethernet distance limitations of 100m, as well as provide Power-over-Ethernet to end devices such as IP cameras, wireless access points, or other IP devices. The use of existing cabling allows solution providers to efficiently deploy Ethernet services faster and more cost-effectively, resulting in savings of both time and money.