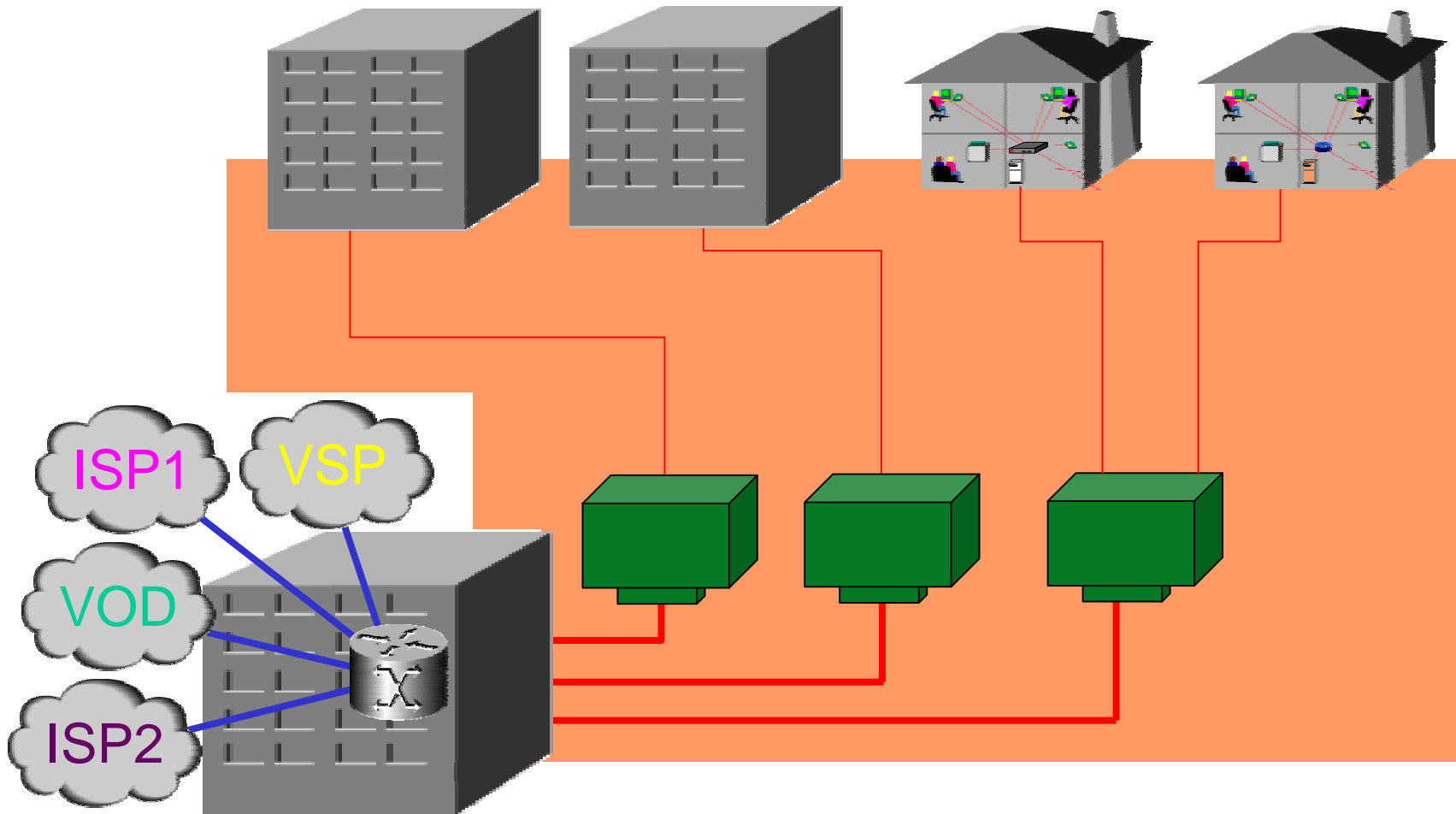# Ethernet in the First Mile Overview

Nate Walker

VP Marketing & Business Development

Dominet Systems, Inc.

nate@dominetsystems.com

Ethernet in the First Mile

The First Mile

- **The first link**
  from the customer's point of view

- **The critical link**
  between customers and service providers

- **The key**
  to broadband access

What's in the First Mile

- **A variety of protocols:**

  - **ADSL/HDSL – too slow, too ATM**

  - **Cable Modem – too slow, not dedicated**

  - **ISDN – way too slow, way too complicated**

  - **Satellite – too expensive, download only**

  - **Broadband wireless – to be determined**

What's in the First Mile

- A variety of media:

  - Unshielded twisted pair

  - Coaxial cable

  - Fiber

  - Hybrid fiber/copper

  - Air

What's Ethernet

- **Speeds from 1 Mbps to 10 Gbps**
- **Spans from 10s of meters to 10s of km**
- **Any media, anywhere**
- **Full duplex - dedicated access**
- **Half duplex - shared access**
- **Point to point**
- **Point to multi-point**
- **Common packet format**

What's Ethernet

- **The world's favorite LAN**

- **IEEE/ANSI/ISO/IEC standard 802.3**

- **The best bang for the buck in datacom**

IEEE 802.3 EFM

- **IEEE 802.3 EFM Study Group**
  - **Established November, 2000, three meetings to date, ~130 attendees per meeting**

- **Drafted**
  - **Project proposal (PAR)**
  - **Objectives**

- **EFM Project Approved**
  - **IEEE 802 LAN/MAN Standards Committee (LMSC) announced Project approval (PAR) on July 16, 2001**
  - **IEEE-SA standards board approval expected Sept. 13th**
  - **Initial 802.3ah EFM Task Force meeting Sept. 17th**

- **Web Site: http://www.ieee802.org/3/efm/**

# EFM Objectives

- **Support subscriber access network topologies:**
  - **Point to multipoint on optical fiber**
  - **Point to point on optical fiber**
  - **Point to point on copper**
- **Provide a family of physical layer specifications:**
  - **1000BASE-X extended temperature range optics**
  - **1000BASE-X long distance over single SM fiber**
  - **PHY for twisted pair cabling**
  - **PHY for long distance over PON**
- **Support OAM for subscriber access networks**

Ethernet in the First Mile
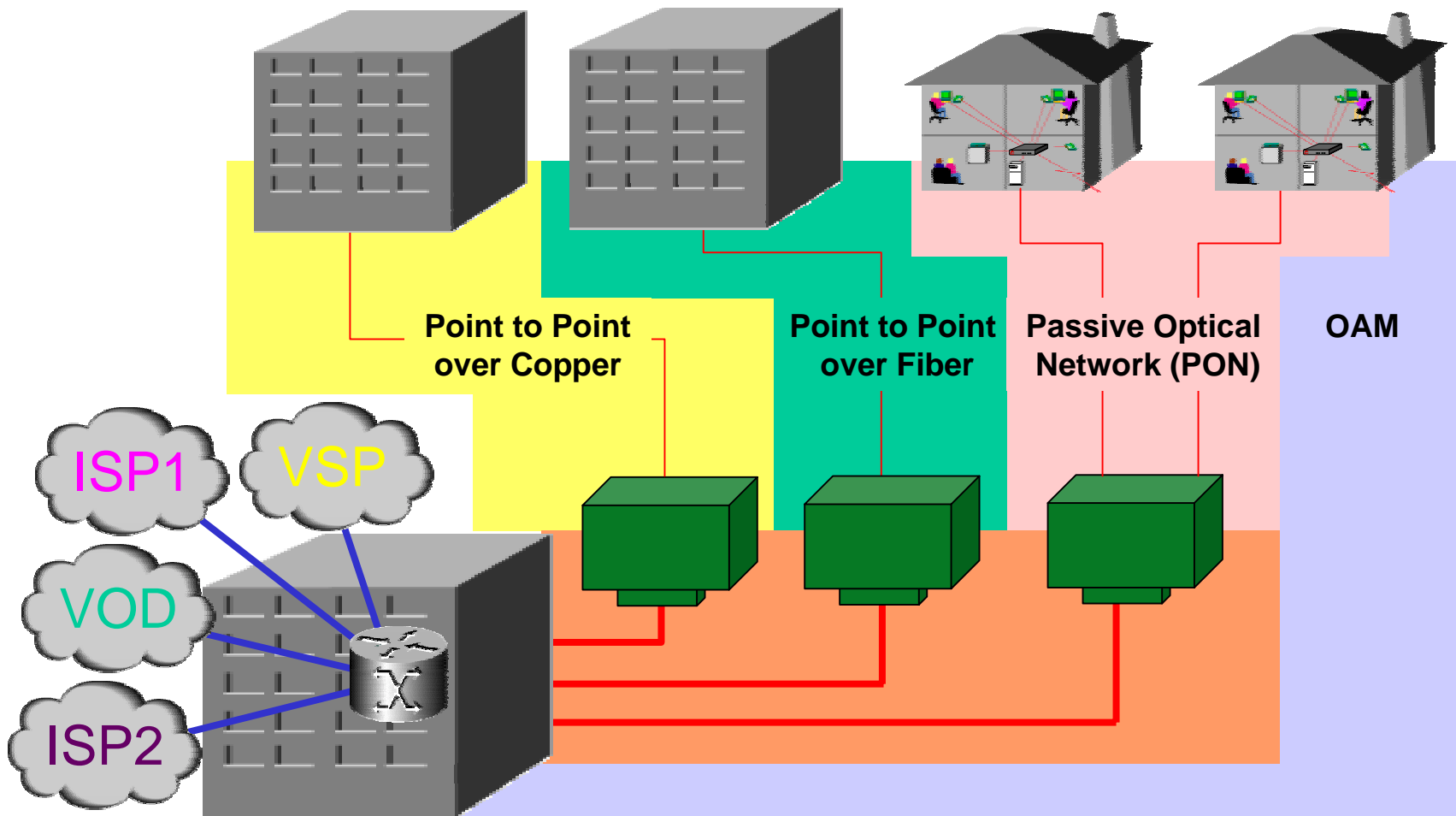
The Elements

- Ethernet over point to point copper
  - Works on existing POTS wiring
  - Fast, simple, inexpensive
- Ethernet over point to point fiber
  - Very high bandwidth
  - Future proof
- Ethernet over point to multi-point fiber
  - Very high bandwidth
  - Less expensive than point to point fiber
- OAM
  - Management of the first mile link