

# Internet Access

**Mario Baldi**  
Synchrodyne Networks, Inc.  
mbaldi@synchrodyne.com

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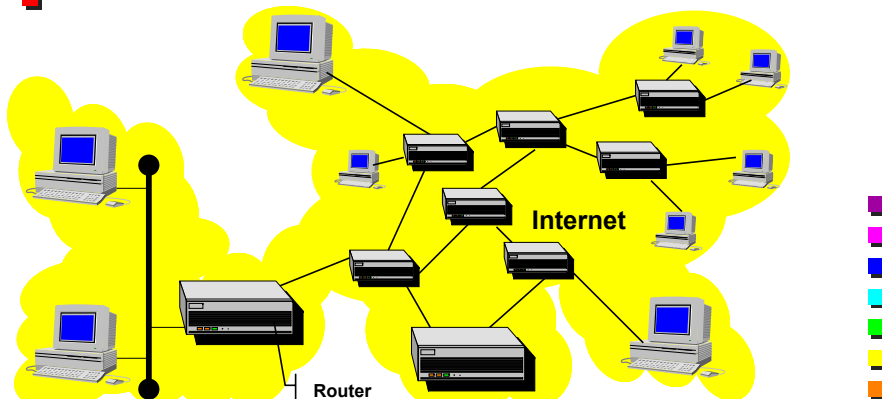
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# “To Be Connected” Physical Viewpoint

To have a direct (Layer 2) connection to a router that is part of the Internet, i.e., that is connected



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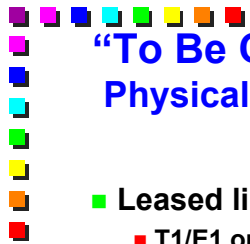
# “To Be Connected” Physical Viewpoint

## Host

- Dial-up connection
  - POTS (Plain Old Telephone System)
  - ISDN (Integrated Service Digital Network)
- High speed connection
  - x-DSL (Digital Subscriber Line)
  - Cable Modem
- Wireless
  - Cellular
  - Satellite
  - Fixed
- LAN (Local Area Network)
  - Ethernet

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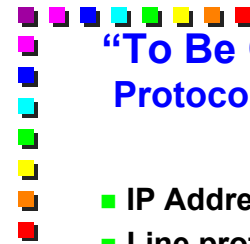
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# “To Be Connected” Physical Viewpoint

## Network → Router

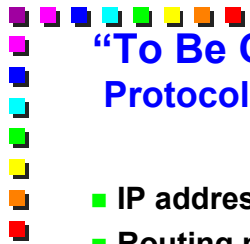
- Leased line
  - T1/E1 or fraction
  - STS-1
  - OC-192
- DSL/Cable Modem
- MAN/WAN (Metropolitan Area Network/Wide Area Network)
  - Frame Relay
  - ATM
  - Ethernet
- LAN (Local Area Network)
  - Ethernet



# “To Be Connected” Protocol Viewpoint

## Host

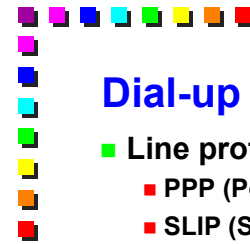
- IP Address
- Line protocol
  - PPP (Point-to-point protocol)
  - SLIP (Serial Line IP)
  - Ethernet



# “To Be Connected” Protocol Viewpoint

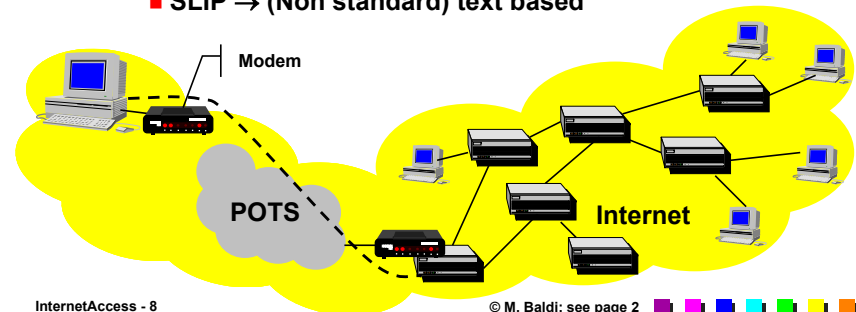
## Network

- IP address pool
- Routing protocol
- Line protocol
  - PPP (Point-to-point protocol)
  - HDLC (High-level Data Link Control)
  - Frame Relay
  - ATM
  - Ethernet



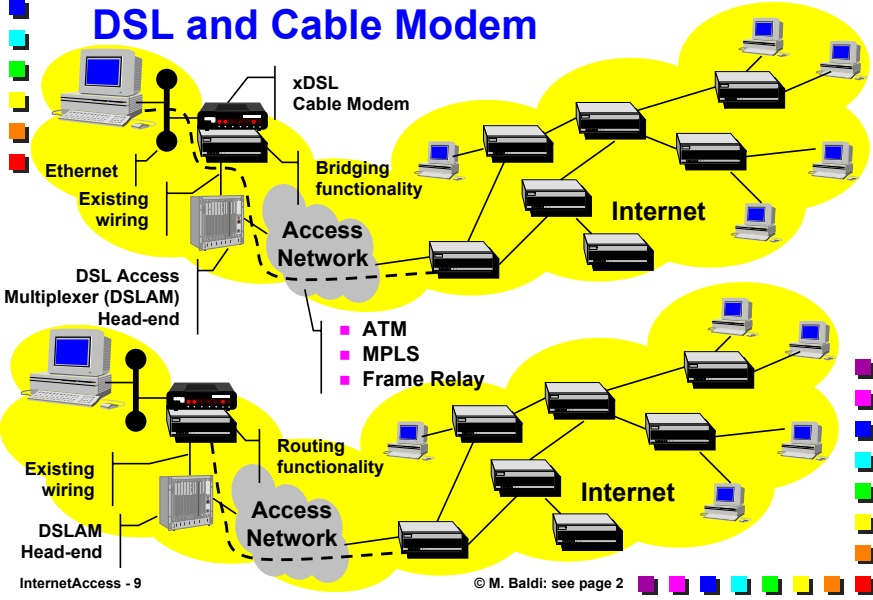
# Dial-up Access

- Line protocol
  - PPP (Point-to-point protocol)
  - SLIP (Serial Line IP)
- Address negotiation
  - PPP → IPCP (IP Control Protocol)
  - SLIP → (Non standard) text based





# DSL and Cable Modem



# Security

## Unauthorized access

- Always on connection has higher risk
  - More time for the attacker
- Static addressing has more risk

## The "solution": restricted access

- Filtering at access point
- Access router
  - Better programming interface
  - More flexibility
  - Hardware or software
- Dedicated *firewall*

