Computer Network Assignment 1   
Comparative analysis of Directed Transmission Media

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| **Parameter** |  | **Shielded Twisted Pair (STP)** | **Unshielded Twisted Pair (UTP)** | **Baseband Coaxial Cable** | **Broadband Coaxial Cable** | **Optical Fiber Cable** |
|  |  |  |  |  |  |
| **Type of Medium** |  | Twisted pair with shielding | Twisted pair without shielding | Single channel for digital signals | Multiple channels for analog/digital signals | Glass or plastic fibers for light transmission |
| **Bandwidth** |  | Moderate | Low to Moderate | Moderate | High | Very High |
| **Signal Attenuation** |  | Lower than UTP | Higher than STP | Moderate | Moderate | Very Low |
| **Data Transmission Speed** |  | Moderate | Low to Moderate | Moderate | Moderate to High | Extremely High |
| **Transmission Distance** |  | Shorter than coaxial and fiber | Short | Medium | Medium | Long |
| **Interference Resistance** |  | High (good shielding) | Low (prone to interference) | Moderate | High | Very High |
| **Cost** |  | Higher than UTP | Low | Moderate | Moderate to High | High |
| **Durability and Maintenance** |  | Moderate | Moderate | High | High | Delicate (requires careful handling) |
| **Ease of Installation** |  | More difficult than UTP | Very Easy | Moderate | Moderate | Difficult |
| **Scalability** |  | Moderate | Moderate | Moderate | High | High |
| **Security** |  | Moderate | Low | Moderate | Moderate to High | Very High |
| **Power Requirements** |  | Low | Low | Moderate | Moderate | Low |
| **Use Case** |  | Environments with high EMI | LANs, telephony | Digital communication in LANs, TVs | Analog or digital broadband systems | Long-distance and high-speed communication |