We discuss the performance of physical-layer impairment-aware anycast communication over transparent optical networks. The simulation results show that the proposed anycast routing algorithms can significantly decrease the request loss due to impairments, such as crosstalk and ASE noise.

**Anycast: Definition and Applications**

The anycast communication paradigm is a variation of unicast, where the source node has a choice of selecting a destination from a candidate set. Anycast can be used by a client (source) to find an appropriate server (destination) when there are multiple servers.

**Anycasting** can be used for applications such as,
- End-Computing,
- Content distribution,
- Network storage.

**Problem Definition**

For a given source node $s$ and the candidate destination set $D_s = \{d_1, d_2, \ldots, d_m\}$ with a cardinality $|D_s| = m$,
- A source node $s$ can choose any one among $m$ destinations ($C_m^1$). Anycast configuration is denoted as $m/1$.
- Request is denoted by $(s, D_s)$.

**Conclusion**

Our work presents a novel approach to provide required transmission quality on the WDM layer for content distribution, storage area, and data center networks.

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**Crosstalk-Aware Anycast Routing and Wavelength Assignment in Optical WDM Networks**

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