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| **Abstract:** |  |
| We propose the design and evaluate the performance of an optical communication network that incorporates both OTDM and WDM techniques. The combination of OTDM-WDM system in our designed architecture provides up to 128 Gbit/s data transfer rate with long haul capability of 1620 km transmission range without any forward error correction (FEC) and maximum 128 channels. Bitrate of each channel is 1 Gbit/s, and the communication is done by single mode fiber of 50 km and dispersion compensation fiber of 10 km followed by one optical amplifier gain in each span. WDM channels are selected according to ITU-T G.694.1 standard 200 GHz channel spacing grid. Bit error rate remains significantly low while transmission distance for the OTDM is 4860 km at a BER < 10-12 , and for the OTDM-WDM it is 1620 km at a BER < 10-12 both measured under 128 bits sequence length. | |