

The exponential growth in data consumption has resulted in the ramping up of optic fibre cable (OFC) deployment in the country. This calls for professionally managed operations and maintenance (O&M) services. The key deliverables for O&M companies are:

- Minimisation of the number of cuts per unit length per unit time: Typically, the partners are expected to restrict the number of cuts to one to five per 1,000 km per month.
- Minimisation of mean-time-to-repair (MTTR): With the effective deployment of the fault ride-through (FRT) team at strategic locations, an MTTR of two to four hours is expected to be delivered.

There are several challenges in meeting these deliverables. They include:

- Information insufficiency: The non-availability of updated drawings of underground services and of as-built drawings (ABDs) can act as a major impediment. In many cases, the quality of construction as well as the status of losses/cuts is unknown at the time of commercial finalisation.
- Issues related to OFC design and construction: There can be issues pertaining to the quality of construction, specifications, health of OFC, multiplicity of fibre type and equipment required. In addition, there are problems related to alarm communications due to the absence of network operations centre extensions.
- Challenges in manpower management: Manpower optimisation is required for multiple small patches. Further, monitoring of manpower movement, non-availability of skilled manpower, and challenges in managing dissatisfied patrollers impact O&M operations significantly.
- Other issues: There are other challenges such as regulatory and permission issues, ongoing

road and other infrastructure construction-related issues, temporary and permanent restoration issues, intentional fibre cuts, and law and order issues related to equipment theft.

O&M economics

The typical cost elements of OFC O&M (excluding spares and OFC-related material costs) include patrolling costs, equipment maintenance and capex amortisation. Patrolling costs include the patroller's salary, cost of FRTs (including vehicle and driver costs) and rentals of FRT stations. The costs involved in equipment maintenance and capex amortisation, on the other hand, include management and monitoring costs, including overheads and miscellaneous expenses (sundry materials, etc.). These costs together work out to Rs 700-Rs 1,200 per km, depending on the terrain and the scope of work.

Other things remaining constant, the costs are a trade-off and a function of the number of kilometres per FRT and the number of kilometres being handled per patroller. Under the current cost structure, O&M of OFC is probably one of the rare businesses where service level agreements are fixed assuming certain defaults.

Scope for improvement

Improvements in O&M functions and consequently in OFC deployment can be achieved by installing vehicle-tracking software. Mobile phones should be used as monitoring tools. Further, integrated maintenance models should be used for the deployment of utility lines and OFC. Besides, combined O&M handover by multiple owners must be practised. The O&M team should be involved in quality checks and preparation of ABDs. At a broader level, regulatory/permission procedures should be streamlined and utility drawings updated on a regular basis.

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