Optimize network OPEX and CAPEX while enhancing the quality of service

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Based on previous experiences for telecom operators, utilities and other capital expenditure (CAPEX) intensive industries, EY has defined and successfully implemented a robust approach, based on best practices from various industries, to helping mobile network operators (MNOs) and internet service providers (ISPs) optimize their network while enhancing their quality of service, which has become a distinctive advantage against mobile virtual network operators (MVNOs) or low-cost operators.

In the following pages, you will find our main thoughts around these programs, as well as levers for improvement and critical success factors for a sustainable implementation. We shall describe how we can help telecom operators save up to 40% on operational expenditure (OPEX) and capital expenditure (CAPEX) by adopting breakthrough models.
I. An urgent need to optimize network OPEX and CAPEX

In the past few years, the telecom sector has undergone considerable changes. The emergence of low-cost operators and MVNOs has led to a resurgence of fierce competition on price and, consequently, a sharp erosion of margins. Telecom operators have reacted to this trend by adjusting their offer mix to maintain average revenue per user (ARPU) levels and their marketing efforts to optimize their cost base, mostly in commercial and distribution areas.

Investment strategy (the “think process”) has already been revamped; however, important opportunities have been overlooked and must be pursued in terms of cost optimization, notably concerning the “build and run” activities. These include refining the network maintenance process and the renewal strategy or rethinking the production and maintenance organization and related support functions. Based on previous experiences, EY estimates that these initiatives represent a potential 15% to 40% gain in both OPEX and CAPEX, depending on the operator’s maturity, geography and degree of integration between fixed and mobile activities.

To avoid disruptions, incidents and a general decline in the quality of service, a relevant resource allocation process must be set up. Through various network optimization projects for telecom operators and other CAPEX-intensive industries, EY has defined and successfully implemented key levers to optimize network OPEX and CAPEX while improving the quality of service.

Figure 1: 2008-10 change in OPEX

Source: EY estimates (mature European telecommunication companies (Telcos)).
II. What is at stake? OPEX optimization, CAPEX allocation and quality of service (QoS) mastering

While launching these transformation programs across the think, build and run activities, telecom operators should bear in mind three main objectives:

1. Optimize OPEX by reducing waste and streamlining supervision and intervention operations: this process is achieved through a better sizing of both field force teams and central functions, such as network supervision, to adapt constantly to daily, weekly or monthly workload variation, and real-time tracking and removal of non-value-added activities.
   - The planning of technicians’ activities can be optimized through better predictive analysis and by pursuing pooling opportunities.
   - Regular monitoring of KPI (average number of interventions per technician, time to repair, time in the vehicle, etc.) dramatically and quickly enhances productivity.
   - A better tracking of spare parts also leads to the removal of unnecessary replacements of cards with no fault found.
   - A cut in energy consumption through proper tracking of key parameters can lead to tremendous savings, as 85% of the total energy costs of a telecom operator is generated by network and data center infrastructures.

All things considered, these improvements represent a potential 15% to 40% gain in OPEX optimization, depending on the maturity level of the operators and the network configuration.

2. Define the right allocation of CAPEX: in addition to the network installation strategy and selection of appropriate network components, CAPEX optimization is achieved by finding the right balance between maintenance and renewal activities based on robust criteria, such as the average life of equipment and the cost to repair, the localization of the equipment and the various access constraints associated (for example, antennas located in remote or difficult-to-reach areas). Based on a proper risk and criticality analysis, the opportunity to double network assets as backup equipment should be studied.

3. Enhance the quality of service (QoS): an easy way to deal with this type of program would be to simply freeze all maintenance expenditures. However, quality issues should also be taken into account by allocating the right amount of resources for an expected QoS: making less interventions on assets that have proved reliable in the past and investing more where it's necessary to cut drop calls or failure; on the contrary, accepting a lower service for some sites or geographies.

Different initiatives might be prioritized depending on the main characteristics of the market: in emerging countries, the focus would be on network deployment costs and support (e.g., through network sharing) or energy consumption optimization (e.g., trade-off between photovoltaic and fuel-based solution); while in mature markets, the main cost-optimization targets will concern maintenance operations and network monitoring.

If network sharing used to be a key issue for emerging markets, it also offers some opportunities for operators in mature countries.

Figure 2: Example of QoS targets in a network transformation plan

Source: EY estimates (mature European Telcos).
III. Six key levers to optimize build and run operations

1. Install and run
   - Network installation
   - Energy efficiency
   - Key parameters monitoring
   - Network sharing

4. Make or buy
   - Make-or-buy strategy
   - Selection of third parties
   - Value-added sourcing
   - Service level agreements (SLAs)
   - Supplier management

2. Maintain and renew
   - Preventive maintenance
   - Predictive maintenance
   - Critical equipment identification
   - Failure root cause analysis

5. Revamp supply chain
   - Supply chain footprint
   - Spare parts management
   - Physical flow optimization
   - Remote access solutions

3. Optimize process
   - Alarms monitoring and analysis
   - Remote intervention
   - Planning and scheduling
   - Field efficiency
   - KPIs and management system

6. Redesign organization
   - Geographical split and boundaries
   - Localization of key functions
   - Pooling opportunities
   - Sizing
   - Skills

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1. Review the installation strategy (build) and enhance (run) activities:
   - Ensure that the network can handle the projected use (through predictive algorithms and stress tests) and that energy consumption of the operation is fully optimized. Using remote and machine to machine (M2M) devices can be strategic in the network deployment, as it is 40% cheaper than on-site interventions.

2. Revamp the maintenance and renewal policy
   - De-average the resource allocation and establish new criteria for the renewal of Telco equipment to strike a balance between maintenance and investment. This process can be achieved through the redesign of proper visit and first-level maintenance, critical asset identification, review of content and frequency of preventive maintenance, and introduction of predictive maintenance, based on key parameters’ deviation.

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Figure 3: Maintenance and renewal prioritization

Source: EY methodology.
3. Upgrade key processes across the think, build and run value chain, set the appropriate KPIs and deploy a proper management system:

- Intensify remote maintenance and interventions
- Ensure the flexibility of the alarm system
- Optimize maintenance rounds through proper planning and interventions follow-up
- Revamp the daily, weekly and monthly management system to monitor performance and take corrective actions
- Develop a continuous improvement culture, and identify and promote the sharing of best practices throughout the organization

To ensure maximum benefits, EY considers the introduction of new technologies as necessary to achieve objectives at the right pace; for example, process automation and tracking through PDA and M2M technologies, predictive maintenance algorithms, intelligent diagnostic systems (TEMIP), route modeling software, remote intervention systems, advanced alert tracking and analysis technologies or geo-location devices.

4. Reconsider the make-or-buy strategy policy all along the value chain

For each function and key activity, the criteria to choose between internalization and externalization are:

- The strategic value of the activity, i.e., strategic activities that should be kept in the company
- The competencies availability
- The volume workload – some processes do not generate enough overhead to warrant the creation of a specific internal team

In the case of externalization, the setup of a consistent strategy for the selection and management of third parties is key, taking into account the total cost of ownership (TCO) approach. In particular, a specific team must be dedicated to manage suppliers on a day-to-day basis and ensure SLA objectives are met.

"The main issue is to enhance the capacity and reliability of critical equipment, thanks to a robust de-averaged maintenance and renewal policy based on heavy quantitative data and proper analysis of root causes for failures."

Nicolas Clinckx, Executive Director – EY
5. Redesign the supply chain footprint and optimize daily physical flows based on movements, equipment density and technology:

- Redefine the appropriate location of warehouses
- Promote remote access solution and improve the accessibility of sites when the return on investment (ROI) is acceptable
- Ensure a proper sizing of spare parts stocks and optimize physical flows between operators, vendors and technicians

6. Redesign the organization structure for direct and indirect functions:

- Study the geographical split (number of geographies and boundaries)
- Agree the best localization for the main functions (central vs. local) based on the expertise required and the need for proximity and reactivity
- Mutualize processes between the operational and maintenance task forces
- Ensure internal competencies match technological evolutions (2G, 3G and FTTH)
- Reconsider the role of support functions, proper sizing and adequate hierarchy levels
In order to achieve sustainable improvements, optimize network costs on a long-term basis and develop a continuous improvement culture, a robust transformation approach is needed.

Based on previous projects for telecom operators and other CAPEX-intensive industries that have already successfully implemented network transformation programs (such as water, gas, district heating network and process industries), EY has identified five critical success factors:

1. Strike the right mix between quick wins and medium-term initiatives

- Quick wins such as proper filtering of alarms, automated remote access, proper maintenance KPIs and deployment of a relevant management system
- Medium-term initiatives such as de-averaging the maintenance policy, appropriate reliability-centered maintenance loop, proper root cause analysis and problem-solving approach for recurrent failures

During such programs, 15% to 20% of the total expected gains can be achieved during the year of the implementation allowing cash-neutral projects year one.

Figure 5: Simulation of best-case FTE OPEX gains while redesigning the organizational model and implementing quick wins

Source: EY estimates (mature European Telcos).
2. Create a breakthrough in the design of the organization, while working on practices and performance:

- Define the appropriate number of regions within a country
- Rebuild the localization and sizing of key functions, depending on the degree of expertise needed and the need for proximity
- Ensure employees’ skills and areas of expertise are aligned with the market and anticipate changes in technology, investing in all relevant pooling and outsourcing opportunities

3. Ensure a strong involvement of the field force during all phases of the project to ensure commitment and sustainable implementation: diagnosis, detailed design, pilot or roll-out phases.

4. Define a clear and adjusted communication at all stages to leaders, managers, field forces and employee representatives to clarify objectives, explain the methodology and inform about the first impacts on performance.

5. Set up a robust value-added project management office: detailing project charters, road map and resources needed; tracking progress and issues with relevant committees progress made and issues, and taking corrective actions when needed; installing a continuous improvement approach or identifying next steps.

“Due to the vast diversity and volume of assets and locations to address, the complexity of these projects is mainly linked to organizational and management issues, rather than technical ones.”

Nicolas Clinckx, Executive Director—EY
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