

Extracting network operations efficiency in the post-COVID-19 era

How telecom operators can overcome complexity and demand challenges



Globally, the telecommunication industry faces declining profitability levels with constant pressure on operators' top line because of price wars and competition from OTT players, as well as increasing expenditures (OPEX and CAPEX) to meet the ever-growing data demand and investments required in next-generation networks. The COVID-19 crisis has exacerbated this situation due to work-from-home and stay-at-home models. Arthur D. Little is partnering with telecommunication players to overcome these challenges and to identify and implement operational transformations aimed at improving performance and enhancing the customer experience (CX) as well as the quality of service. We recommend a transformative approach to support clients that redefines network operations, relying on a wide range of concrete project experiences where evolving toward network cloudification/softwarezation will change mobile network operators' (MNO) cost structure, with the goal of reducing OPEX and optimizing CAPEX.

Pressure on top line asks for next level of efficiency

Intense competition means telecom players must aim for better efficiency to compensate for pressure on the top line. They must build a transformative multiyear program to protect margins for future investments, whatever market conditions and strategies for increased data traffic will be. In fact, Ericsson [forecasts](#) global data traffic will reach 160 exabytes per month by 2025 (see figure below), considering all mobile technologies, while Cisco is forecasting a 20%-30% CAGR range increase of total IP traffic in Asia-Pacific (APAC), Europe, and North America regions between 2018-2023.

Ericsson data traffic forecast, 2015-2025



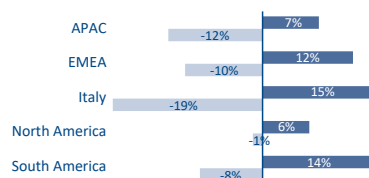
Source: Ericsson

Mobile and fixed data traffic increased as COVID-19 forced people to work from or stay at home. This caused a download speed drop at times, mainly due to an increase of concurrent connections and larger volumes of data consumed. Services such as streaming, videoconferencing, or gaming have intensified, inducing giants such as Netflix and Disney to reduce streaming quality in some markets to ease the stress on networks.

COVID-19 speeds up the need for higher efficiency

The COVID-19 crisis has changed the hourly data traffic profile and increased usual peak hours. This new busy hour profile has been registered more in APAC and Europe, Middle East, and Africa (EMEA) regions than North America, according to Opensignal [research](#) (see next figure). Italy, where data traffic increased by 15% and downlink speed dropped by nearly 20%, has experienced the highest increase.¹ For example, Italian fixed-fiber operator Fastweb witnessed a [spike](#) in network usage early in the pandemic, measuring one years' traffic in just one week.

February 2020 variations in data transmission



Source: Arthur D. Little analysis

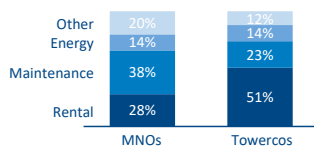
Cost-efficiency approach beats one-off cost cutting

Based on Arthur D. Little's experience, a one-off cost-cutting approach is not the right solution for sustainable impact in the long run. Telcos need to identify the investments necessary to quickly respond to new customer needs, both in terms of data traffic and download performances. To meet these new market requirements and react to the financial pressure, telco players must proactively launch cost-efficiency initiatives.

1 Source: AGCOM Report, June 2020; Opensignal Report, June 2020; ADL analysis

OPEX, including site rental, energy, and personnel, represents about 50% of the total operating costs of a typical telco operator. This portion is even greater (70%-80%) for towercos. Out of this 50%, site rental, maintenance, and energy costs cover more than 80% of the yearly total (see figure below). Maintenance represents the highest cost for MNOs, while site rental is the largest for towercos.

Network OPEX distribution



Source: Arthur D. Little analysis

Operators must rethink their cost structure to be lean and more efficient, reduce absolute spending while growing their networks, and add capacity and new technologies, thus increasing overall complexity. With its clients, Arthur D. Little has identified solutions to streamline transformational cost improvements, focusing on network consolidation and energy, maintenance, and site rental costs.

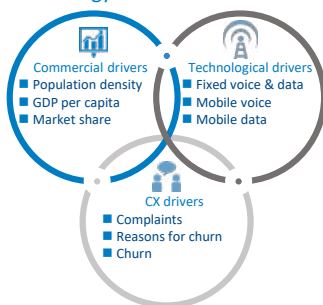
Efficiency from network consolidation

Telco players can perform optimization interventions on rental, maintenance, and energy, as we will explore later in this Viewpoint. An opportunity for performance improvement that is unique to towercos, however, is network consolidation.

The typical business model for towercos includes increasing tenancy ratios (leveraging onsite consolidation) to reduce rental and maintenance costs and avoid CAPEX. The target should be to reduce these costs by up to 40%, primarily through lower rental (targeting 1.3-1.5 rent range of the base fee paid by the anchor tenant) and maintenance costs, along with huge CAPEX avoidance. Mobile network operators' OPEX structure can consequently change by hosting fees but depends on specific contractual agreement governing service fees.

There has been a recent rise in network consolidation, especially in Europe, despite limitations imposed by electromagnetic pollution laws (Italy, for example, has one of the most restrictive rules in Europe, allowing just 6 V/m, while UK legislation allows 41 V/m).

A comprehensive methodology to evaluate sites



Source: Arthur D. Little analysis

Network consolidation is usually driven by two main factors: technical KPIs and rental cost. A more comprehensive approach for a smart site dismantle methodology should combine technical KPIs and rental costs with commercial and CX KPIs to enable a 360-degree view of the current situation. This approach provides insight into future site needs, allowing for better evaluation of potential for consolidation (see figure above).

Relevant combined KPIs at the site/geographical area level enable operators to de-average the average and to evaluate relative priorities of each domain, providing a clearer indication of what should be done. This ensures that all possible scenarios are viewed from a variety of perspectives to ensure the company chooses the best solution to dismantle a site.

Arthur D. Little deploys big data analytics to evaluate the profitability levels of a site's portfolio, considering commercial, technical, and CX perspectives. A real-time, site-level, value-based assessment approach enables telcos to evaluate investment/divestment decisions to enhance the overall return on site investments.

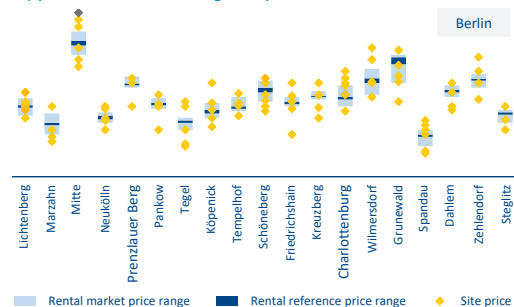
Lever 1: efficiency from site rental

Site rental contracts represent a significant cost for telco players, and especially for towercos. Following a well-structured strategy in operating on site rental cost can mean considerable cost saving and performance enhancements. High-quality and well-organized information about the network is a prerequisite for a robust efficiency plan. A comprehensive and integrated inventory system, updated in real time, is the backbone of the whole strategy and is necessary to understand the current situation of the sites, especially the oldest ones. Such a system allows for full insights about contracts, configuration, equipment installed, etc., managed by the company and enables real-time analysis and reporting. Companies including Verizon or Vodafone have adopted enterprise solutions to better manage NTW data and information and enable monetization of their assets.

Another pillar is a structured database that enables telcos to analyze landlords' contracts on a site-by-site basis in order to establish a program to lower rental costs. Such a program should include a benchmarking analysis and define a contract-renegotiation strategy to drive the company toward challenging but realistic rental-reduction targets.

Benchmarking enables the company to compare current costs with actual market prices by geographical areas, even reaching the neighborhood or street level, along with a meticulous market analysis. This allows for the definition of achievable objectives based on real market trends and grants know-how for future operations (e.g., site-acquisition processes). The figure below illustrates the results of a benchmark Arthur D. Little conducted in Berlin, where rents paid by the company are benchmarked to actual values at the neighborhood level.

Structured approach benchmarking analysis



Source: Arthur D. Little analysis

Developing a renegotiation strategy supports executives in evaluating choices and planning next steps, including: a make or buy (internal resources vs. external agents) decision for renegotiation team setup; levers (such as advanced vs. balanced payment, contract duration extension, up to two to three years' advance rental fee, voice-over

relocation) to adopt during face-to-face contract renegotiation with landlords; and incentive policies linked to actual savings (e.g., to push internal resources or external agents to perform at their best).

Arthur D. Little provides negotiators with a playbook containing all required information and documents (e.g., site benchmark, ad hoc levers, decision tree, current contract, negotiation history) to secure better negotiation performances. Following Arthur D. Little's approach, companies have saved as much as 20%-40% of rental cost.

Lever 2: efficiency from maintenance

Maintenance processes and activities represent the foundation for providing expected quality of service to customers. They contribute 40% or more to operations OPEX and are usually seen as ever-increasing costs over time. Telecommunication players have a real opportunity to reduce operational costs by up to 50%, while improving service quality and CX by streamlining and improving their maintenance activities. Arthur D. Little has conducted a [benchmark study](#) covering most leading telco players in European, Asian, and Middle Eastern countries to understand how operators address challenges and achieve better performance in their network operations. Results of the [study](#) demonstrate that the best performers in reducing front-office and back-office external costs are 38% superior overall and 18% in terms of staff; in an examination of field operations, the best performer in the study is 56% superior on external costs and 35% on staff, resulting mainly from automation of processes and tools.

The best performers achieved their efficiencies by implementing a portfolio of solutions including: sourcing optimization, managed services agreements to obtain synergies through a technical partner, radical simplification by reducing operational complexities accumulated during the growth, digital shift of the operations to automate and predict events, and new technologies adoption (virtualization, cloudification, and artificial intelligence [AI]).

A multi-year hands on efficiency program in a nutshell

In a long-running collaboration, Arthur D. Little has supported a European operator to compete in a mature and capital-intensive market where ARPU (average revenue per user) is far below 10 euros and the top line is under pressure because of a price war. Facing a negative profit and loss, the CEO decided to redefine the sourcing strategy, moving to a full end-to-end managed services model to leverage huge synergies only achievable by a vendor. At run rate, results have proved that two-digit savings (~33%) over a seven-year period are possible while improving quality of services and network KPIs (i.e., the operator's drop call rate was aligned to the fifth percentile of benchmarked peers).

After some years, the operator was still registering EBITDA margin of 10% (vs. a market average of 35%), and EBIT and free cash flow were negative. Competition grew, and the network architecture was getting more complex due to data traffic increases and the rollout of heterogeneous access technologies. The CTO decided to move to customer-centric operations, shifting from platform KPIs to service QPIs and introducing a first wave of network virtualization. Those initiatives brought OPEX increase avoidance (~20%) enhancing the CX, as confirmed by an improved customer satisfaction index.

Profit and loss and free cash flow improved but were still not good enough to compete in a market with huge margins erosion and a negative ARPU. The company achieved 20% savings by digitizing network operations (e.g., fault management systems automation and adoption of an AI algorithm) and conducting a radical simplification of the processes supported by off-the-shelf systems.

This case study summarizes the main efficiency initiatives an operator can adopt to reduce network down time, providing better service-level agreements and lowering revenue loss. Arthur D. Little has found that other approaches can be implemented as well:

- A structured and proactive "service management model" approach (from reactive to predictive maintenance) enables operators typically to increase their network availability by up to 30% and reduce the escalation of customer claims by up to 10% for faults related to network.
- A periodic fault management analysis approach to monitor network operation center performances aims to optimize costs (reducing the number of trouble tickets) and be as close as possible to best practices (e.g., restricting the number of trouble tickets forwarded to third-level support to within 1%).
- An integration between systems within operations provides multi-functional dashboards enabling network engineers to identify critical areas (e.g., throughput per user in busy hour below the minimum acceptable threshold for good CX) for process improvement, end-to-end monitoring, and performance management capabilities enhancements.
- An integration between operations systems and customer care systems allows better response to clients' inquiries in case of faults (e.g., expected time for resolution in a specific geographical area) or to enable an outbound proactive call campaign to inform high-value customers about faults and estimated time for resolution.

All of these efficiency levers pertain to either MNOs or towercos, but the latter should be prepared to manage new technologies and identify new revenue streams to monetize their assets. To do so, organizations must have reliable, real-time visibility into their structures and understand the entity of available capacity for installing additional equipment and the passive infrastructure's technical specifications to ensure structural integrity. Towercos that have developed such an integrated image of the site have achieved an OPEX optimization of 15%-25% and raised opportunities to increase their top line by 10%-30% by adding more tenants.

Lever 3: efficiency from energy management

Companies in different geographical areas must identify the best solutions to lower energy consumption and related costs, considering factors such as the climate or the availability of commodities.

Moving legacy active equipment to a single RAN cabinet is the first approach to consider; equipment modernization and consolidation allow consumption optimization (up to 70% depending on network vendor) and CO₂ emission reduction (up to 75%), as well as operations simplification and site space release. Introducing energy efficiency technologies is another way to reduce power consumption: deployment of more efficient rectifiers and a massive employment of radio stand-by modalities (shutting down carriers) during off-peak hours can bring a 5%-10% saving. Automation tools can enable the remote network operation

center to manage air-conditioning to bring another 5%-10% saving and avoid the need for field technicians to go to site locations.

Free cooling systems, which force air exchange between an internal site and the external environment to lower a site's internal air temperature, are limited geographically due to climate. However, in some areas, cooling optimization together with advanced climate-control systems (to balance free ventilation and air conditioning set point) show a potential 15%-20% savings in consumption and require limited CAPEX per site. Case studies demonstrate an average payback period of up to two years.

Adoption of solar panels is another alternative for optimization. They have geographical and space limitations to be a real alternative to electricity or diesel generators, requiring clear sky conditions most of the year and space to power a site (to gain an average power of 8 kW requires more than 50 sqm). Despite these constraints, use cases highlight significant savings, mainly due to reduced prices over the last 10 years (by some 80%-90%) and to government incentives. In fact, green bonuses for sustainable energy installations often make such an investment very appealing. Solar is becoming more and more attractive, even in countries where oil prices are very low (e.g., in the Gulf Cooperation Council [GCC] region, with a breakeven price of about US \$0.05 per kWh).

Arthur D. Little also recognizes solar energy as a valid alternative to generators in areas where the electricity grid is not present, even in those countries where diesel prices are as low as in the GCC region. The convenience of replacing diesel generators with solar has been proved by several use cases built for operators in the Middle East, with a payback period of less than five years. Companies have explored renting and managed service agreements as sourcing opportunities to simplify operations as well as partnering with suppliers to manage the entire equipment lifecycle.

In summary, overall consumption efficiency depends on the extent of the interventions taken and the size of the total network. Arthur D. Little estimates an average performance improvement of 15%-25% of the total energy cost is achievable with the right implementation.

Insight for the executive

Operators face inevitable operational changes driven by technological advancements that will be key to enabling network automation and enhancing CX. By taking a decisive strategic shift in replacing legacy technologies and transforming the organization so that it can support future customer-centric business, operators make cost transformation a viable option.

Driving a transformation across a multifaceted organization requires challenging the status quo. Operators may find this endeavor demanding, and they may well face internal resistance, among other barriers.

To succeed, operators must realize that operations are no longer a mere prerequisite but can be a driver of value to enhance CX and support new, innovative services. They must also establish grounded initiatives, as described in this Viewpoint, and ensure efficient execution, leveraging the competition between prospective cost-transformation providers.

Following this guidance, Arthur D. Little believes that operators can effectively navigate the strategic choices that leverage the right support and methodologies. In turn, they will realize their transformation visions and be better prepared in the new landscape of next-generation connectivity.

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Arthur D. Little

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