CYIENT zinnov

DECOMMISSIONING & MIGRATION

A CATALYST FOR NETWORK TRANSFORMATION & ENVIRONMENTAL SUSTAINABILITY

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EXECUTIVE SUMMARY

The world is becoming bandwidth-hungry at an exponential pace. Be it the bandwidth consumption at homes, driven by new entertainment forms, smart home configurations, COVID-19 induced home office setups or in the enterprise space, driven by the proliferation of IoT and surge of Industry 4.0. This is forcing countries globally to accelerate the shift towards fiber network and 5G. Upgrading existing networks and planning the "Networks of the Future" that are flexible, scalable, reliable, and sustainable have become the priorities for telecom companies of the world.

As networks are becoming complex, there is a need to upgrade the wireline transport networks to nextgen technologies. And if we want to optimally plan these deployments, decommissioning and migration is an important aspect to consider. This whitepaper by Cyient and Zinnov, aims to establish the critical contribution decommissioning and migration can make in this endeavor of the telecom operators. It discusses the groundwork required before embarking on a decommissioning journey, the typical decommissioning process, key technology accelerators and the long-term impact decommissioning can have on the business as well as the environment. The whitepaper draws from Cyient's extensive experience in this space and research-based findings from Zinnov.

What is Network Decommissioning?

Network Decommissioning is the process of shutting down and removal of old and technologically obsolete networks, including all the network equipment, cables, switches, POTS lines, etc. This is undertaken across both wired and wireless forms of networks.

Wireline Decommissioning

Decommissioning in wireline is being driven by Fiber-to-the-home (FTTH) deployments globally. Several telecom operators are undertaking large-scale copper switch-off programs. The copper switch-off offers several advantages.

- Older copper networks are difficult to maintain, and the continuous support to sustain the aging copper networks are hard and expensive over time

- There is a lack of technicians with proper knowledge of repairing and maintaining the copper networks

- The parts and twisted-pair cables required to sustain the copper-based networks are expensive and hard to acquire.

Wireless Decommissioning

In the realm of wireless, with the adoption of 4G LTE and 5G, the replacement of voice networks is becoming essential. There are networks that have been in existence for over a decade and are now obsolete as their electronic modes fail to support the scale. The evolution from 2G, 3G to 4G LTE and 5G is driving the demand for decommissioning.

To understand the Network Decommissioning process, we need a clear view of the relevant terms. Some of the key terms are discussed below.

What is removal of nodes?

Removal of benign nodes is an important aspect of the Network Decommissioning process, which helps in testing the overall robustness of the network. The network partner ensures the removal of nodes at the time of Network Decommissioning. This could either be random deletion or targeted deletion of nodes matched against the existing network configuration.

What is recycling of network or designing of removal of networking waste?

Telecom operators often face the challenge of obsolete network devices and hardware when networks are upgraded. The discarded network devices need to be recycled in a safe way. These obsolete elements which amount to e-waste, if left unaddressed, could be toxic and become hazardous to both humans and the environment. Cables, racks, firewalls, routers, switches, and security hardware – all of them contribute to generating e-waste. Hence, recycling of these elements is often undertaken along with the IT recycling process to help minimize such wastes.

The Need for Decommissioning

Cyient's network experts have spoken to various telecom operators and have experience working on multiple decommissioning/migration projects. They found that the top reasons for opting for the process include:

- Retiring the old copper networks to fiber-based wireline networks
- Aiming to achieve sustainable networks
- Aiding in power savings and lower costs of maintenance
- Removal of old hardware or swapping Chinese-made tools/equipment

How to plan a Network Decommissioning?

A typical decommissioning process starts with a deep analysis of the existing network, and then the experts work on designing and developing an execution plan. Subsequently, pre-decommissioning checks and configurations are carried out before performing the cancellations.

Decommissioning

Network Analysis

- Analysis of existing processes & tools, type of devices & services, links etc.
- Devise an optimized approach based on analysis
- Identify and validate need for additional tools to further enhance end-to-end process efficiency

Configuration & Testing

- Perform pre-checks for Service and Link
- Perform Port Testing and traffic
- Apply Device and Service Day 0 Configurations, if required

Decommissioning

- Removal of the Routes
- Perform service CANs (Cancellations)
- Perform platform CANs (Cancellations)
- And Decommissioning of the service and Device from the network
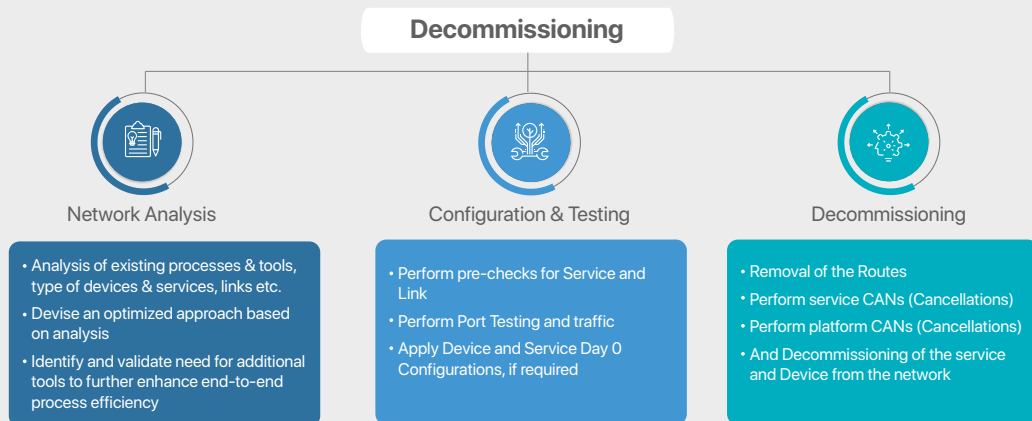
Illustration 1: Typical activities in a decommissioning process

A few tasks that need to be carried out by the service provider before undertaking decommissioning:

- Perform an audit led by the service provider to identify the existing set of regulations
- Identify the servers for decommissioning
- Make the list of all the acquired software licenses
- Cancel any existing maintenance contracts, prior to indulging in decommissioning activities

- Back up all available data
- Disconnect the existing server from the networks
- Ensure software-based data deletions
- Create new data files post the process
- Retire the old servers completely

| Service Provider | →Audit→ | Regulations | Contracts | Software Licenses | →Backup→ | Decommission | New Networks |

Fig - Decommissioning Plan & process

What is Network Migration?

Network Migration is the process of moving/transferring the data and applications from a legacy network to an upgraded network system. The need for network migration is driven by:

- Upscaling the network design to enhance performance and meet infrastructure needs

- Managing the cabling options for an optimized cable architecture

- Supporting the high-speed bandwidth requirements through various cable options like fiber optic and twisted copper

- Measuring and upscaling the network density options, thereby increasing the chances of possible connection options for an existing node.

What are the steps to achieve the Network Migration?

The telecom operators execute the network migration in a series of defined steps and complete the process, as outlined below.

Figure – Service Provider steps to undertake the Network Migration process

The process of migration comprises the same steps as decommissioning but with the exception that migration deals with a live network with operational services. Hence, the risks are multifold.
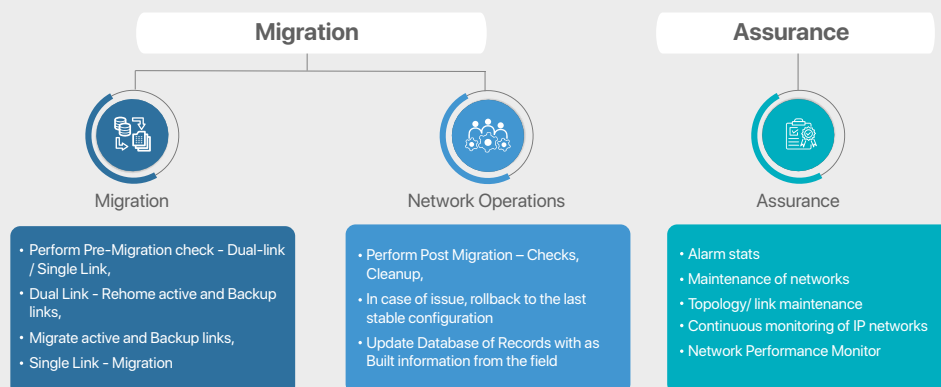

Illustration 2: Typical activities performed for Migration and Assurance

In a migration, the success factors go beyond commercial gains. The key considerations include:

1. Limited downtime during the change window

2. Watertight validation and verification

3. Zero errors

4. Customer satisfaction: speed and quality are of the essence

Technology-led Approach to Decommissioning and Migration

As telecom operators acknowledge the case for decommissioning and gauge the success factors for migration, it becomes evident that there is scope for technology to transform both processes. Below are the steps as to how the telecom operators approach the decommissioning and migration projects by leveraging the technology-led approach.
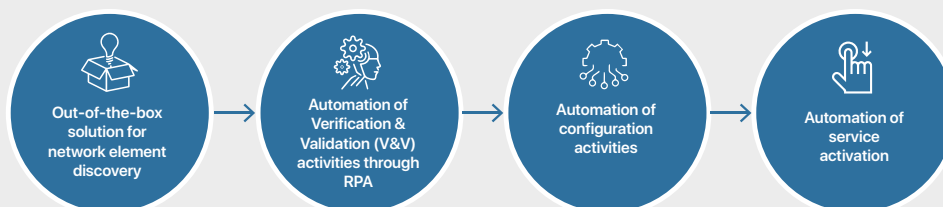

Illustration 3: Technology-led transformation opportunities

Out-of-box Network Element Discovery

In the first step of Network Analysis, the network is audited for active elements. Performing this manually is a painstakingly long process; tools supporting out-of-the-box network element discovery automate this process significantly. Such tools discover and reconcile the Layer 1-2-3 network elements and provide a single, real-time view of the network services.

Automation of V&V activities

Both decommissioning and migration involve several checks, which require logging into multiple systems and traversing through large sets of data. Therefore, Robotic Process Automation (RPA) can be leveraged to automate manual activities such as ensuring that no customers are present on the network devices, validating that the users have been migrated to the target devices, decommissioning from multiple systems, to name a few. Leveraging RPA accelerates the process, saves up to 50% of the manual effort, and eliminates human errors.

Automation of configuration activities and service activation

Traditionally, creation of the configuration scripts has been a manual affair. While manual effort can't be completely eliminated in scripting, tools and platforms are now available to optimize the manual effort. Availability of test environments in such tools, where a configuration can be checked before publishing in the live environment, ensures that costly faults in the future can be avoided.

Key research-based findings and why telecom operators should adopt Decommissioning and Migration

The decommissioning statistics regions highlight the importance of the process over the next 3-5 years. As per research conducted by Zinnov, clients are eager to complete their decommissioning/migration journey for the optimization of their existing networks. The rate of growth of the network traffic has been ranging between 50%-150% across the globe. Thus, to support the massive current and future demand, technical upgrade of the existing networks is vital.

The general perspective is that the cost incurred by decommissioning of redundant devices is not proportionate to the achieved gain from the overall process. Market research highlights that the fiber optic networks occupy 15% of the space captured by their copper counterparts, thereby minimizing the usage of technology access equipment. Cyient and Zinnov, together have interviewed clients on Network Decommissioning, and have discovered that the copper switch-off can save anywhere between 45-65% of the overall energy cost. Some of the other benefits would be better space and energy utilization. Freed up capacity allows organizations to move onto higher bandwidth requirements.

Planned Network Decommissioning

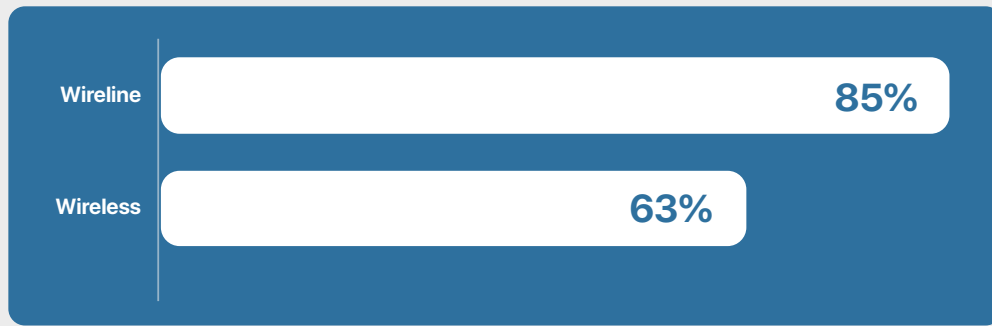|	
Wireline	**85%**
Wireless	**63%**

Figure Approximate number of telecom operators planning for decommissioning over the next 3-5 years

Regional Decommissioning facts across the globe

Telecom operators are targeting the switch over from legacy networks to the new networks across the globe.

- In Europe, some of the countries are targeting 100% copper switch-off along with moving of the PSTN (Public Switched Telephone Network). IP-enabled service Voice over Internet Protocol (VoIP) is now allowing customers to make Internet-enabled calls.

- Apart from European countries, Australia and New Zealand are some of the other countries where network migration has been initiated by the nationalized broadband networks. New Zealand has planned a copper switch-off in a phased manner by the end of 2021.

- In Australia, the planning for a copper switch-off was initiated with the deployment of the National Broadband Network (NBN), and the acquisition of Telstra's copper and cable network by the NBN Co. Customers in "NBN ready" areas. They have 18 months' notice to switch to the NBN, before the legacy infrastructure is switched off. The switch-off will not, however, be to full fiber.

- In the US, major operators like Verizon and AT&T have planned the switch-off in their main areas of operations. AT&T stopped marketing its legacy DSL (Digital subscriber line) services, and its customer services will be upgraded to fiber networks.

Copper Switch off/PSTN

2020 ■ 2021 ■ 2022 ■ 2023 ■ 2024 ■ 2025
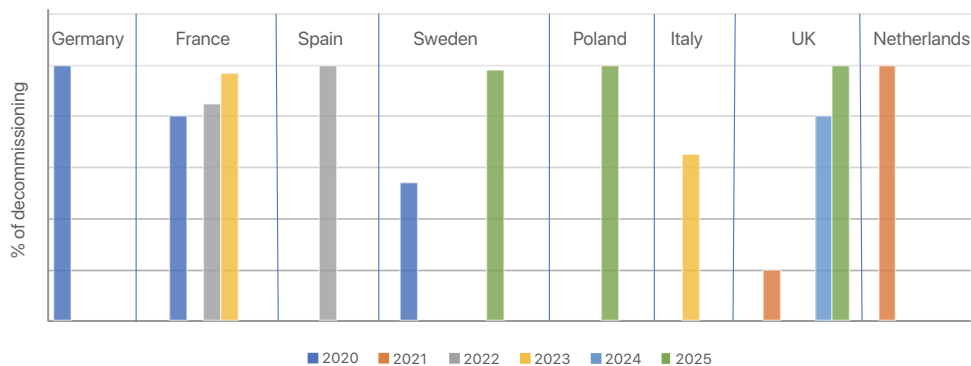
Graph showing percentage of decommissioning undertaken across the world along with forecasted numbers till 2025

Conclusion

The challenges of high demand for data and bandwidth are being countered by operators, equipment manufacturers, start-ups, and System Integrators (SIs) to build the network of the future. The telecom operators have been instrumental in decommissioning the older networks, both from wired and wireless perspectives and are helping build a green, sustainable, future-proof network. Governments across the globe are supporting this green network initiative, which ensures optimized balance of hardware, software, and reduced energy usage. The green network standards make it a mandate to reduce carbon footprints and balance the future networks on an even ratio of energy efficiency vs. energy consumption. Deep collaboration between the ecosystem of telecom operators, equipment manufacturers, and SIs will be key towards building and scaling up the network of the future. This will drive the next era of growth for the Telecom industry through decommissioning and migration of existing networks.

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ABOUT CYIENT

Cyient (Estd: 1991, NSE: CYIENT) is a global engineering and digital technology solutions company. As a Design, Build, and Maintain partner for leading organizations worldwide, we take solution ownership across the value chain to help customers focus on their core, innovate, and stay ahead of the curve. We leverage digital technologies, advanced analytics capabilities, and our domain knowledge and technical expertise, to solve complex business problems.

We partner with customers to operate as part of their extended team in ways that best suit their organization's culture and requirements. Our industry focus includes aerospace and defense, healthcare, telecommunications, rail transportation, semiconductor, geospatial, industrial, and energy.

We at Cyient leverage our deep roots in engineering, digital expertise and a robust technology partnership ecosystem, to support the Communication Service Providers in accelerating the delivery of their access networks and in strengthening the network infrastructure and operations of the Enterprises. Cyient provides multiple solutions across Intelligent Infrastructure, Smart Operations, and Enterprise Network Transformation. To learn more about our offering portfolio, please visit www.cyient.com/communications

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ABOUT ZINNOV

Founded in 2002, Zinnov is a leading global management and strategy consulting firm, with presence in Santa Clara, Houston, Bangalore, Gurgaon, and Paris. Over the past 18 years, Zinnov has successfully consulted with over 250+ Fortune 500 enterprises and technology companies to develop actionable insights that help them create value – across dimensions of both revenue and optimization. With core expertise in Product Engineering, Digital Transformation, Innovation, and Outsourcing Advisory, Zinnov assists clients by:

- Enabling global companies to develop and optimize a global engineering footprint through center setups, and technology and functional accelerators to achieve higher R&D efficiencies, innovation, and productivity;

- Advising global PE firms in asset shortlisting and target evaluation, commercial due diligence, and value creation;

- Growing revenue for companies' products and services in newer markets through account intelligence, market entry, and market expansion advisory;

- Structuring and implementing Digital Transformation levers enabled by technologies like AI/ML, Cloud, IOT, and RPA;

- Helping global companies outline and drive their open innovation programs, design and operate accelerator programs, and enable collaboration with start-ups across specific use cases and predefined outcomes.

With their team of experienced consultants, subject matter experts, and research professionals, Zinnov serves clients from across multiple industry verticals including Enterprise Software, BFSI, Healthcare, Automotive, Retail, and Telecom in the US, Europe, Japan, and India.

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