



Network transformation outlook 2025-2029

Version 1.0 –update (Jan 2025)



Table of content

- Table of content2
- Introduction.....3
- Ongoing HFC transformations.....4
 - 1. Nodes Split.....4
 - 2. *Spectrum extensions*.....4
 - 3. *EuroDOCSIS upgrades*.....5
- Future HFC transformations.....5
 - 4. *DVB-C Evolutions*5
 - 5. *Distributed Converged Cable Access Platform (D-CCAP)*.....5
 - 6. *EuroDOCSIS upgrades*.....6
- Ftth Outlook.....6



Introduction

On June 29, 2018, the CRC (Conference of Telecommunications and Media Regulators, including BIPT, CSA, Medienrat, and VRM) approved decisions regarding the analysis of broadband and broadcasting markets. These decisions require the publication of a "Network Transformation Outlook."

This document serves to meet that obligation and has been created in line with these decisions to ensure transparency for OLOs utilizing VOO wholesale access services about future developments in the VOO network. It includes pertinent information on potential changes in VOO's network over the next five years that may affect existing wholesale services and OLOs seeking access.

The content of this document reflects VOO's current understanding of future network developments and is based on forward-looking assumptions regarding technological advancements and other external factors outside the control of VOO. It may be updated in the future based on decisions made by VOO. Some aspects mentioned have not undergone detailed or final decisions of the management and/or Board of Directors.

Most statements in the present document constitute forward-looking statements. These statements may include, without limitation, statements concerning future technological evolutions, decisions and timelines, and statements preceded by, followed by or including the words "believes", "expects", "anticipates" or similar expressions. These forward-looking statements rely on a number of assumptions concerning future events and evolutions and are subject to uncertainties and other factors, many of which are outside our control that could cause actual evolutions to differ materially from such statements.

VOO is not to be held liable for any inaccuracies, omissions, or shortcomings of the present information, which has been provided to the best of our knowledge and in good faith. This document and its contents are provided independently of any current or future appeals against decisions or regulatory requirements imposed on VOO.

Any potential impacts of network evolution on OLOs will be communicated in a timely manner.

The information in this document is intended solely for OLOs for regulatory wholesale cable access purposes and cannot be used for any other reason. OLOs are strongly recommended to restrain from sharing this information with customers, potential customers, or third parties, as it may lead to misunderstandings and irrelevant inquiries.



Ongoing HFC transformations.

1. Nodes Split

Objective: The aim is to enhance the overall capacity of the network to accommodate a growing customer base and increased user data consumption by decreasing the number of customers sharing the capacity within a DOCSIS serving group on a node.

Timing: Ongoing and expected to last till 2035.

Impact: Customers may experience major network outages lasting up to 1 day (actual split) and disturbances during an additional day (network fine-tuning). The network maintenance activities, which may affect service during this period, will be notified to the OLOs.

2. Spectrum extensions

Objective: The purpose is to increase the overall capacity of the network by transforming the HFC network. This will involve expanding the upstream spectrum (enlarged from 5-65 MHz to 5-204 MHz) and the downstream spectrum (enlarged from 88-600 MHz to 258-1218 MHz).

Timing: The upgrade started in 2022, with a complete roll-out expected to last to at least 2035.

Impact: Customers may experience major network outages lasting up to 1-2 days (severity dependant on the position of the customer on the coaxial cascade) and minor outages on a second day per node (network fine-tuning). The specific impact on customers will be communicated to OLOs based on the finalized upgrade planning. Additionally, to ensure compatibility with the new spectrum, in-home installations may require updates, such as replacing wall outlets, cables, or the NIU, or adding a specific passive splitter. Relevant dates and affected nodes will be communicated to OLOs, along with a list of impacted customers.



3. EuroDOCSIS upgrades

Objective: The purpose of the introduction of EuroDOCSIS 3.1 is to exploit the additional spectrum made available through the spectrum extensions and analog TV replacement projects to enhance internet speed and capacity.

Timing: The implementation will occur in different phases starting from 2021 to at least 2035.

Impact: If the internet profile of OLO customers remains unchanged, there will be no short- to mid-term impact, as EuroDOCSIS 3.0 channels will remain available for several years. However, in the long run, the number of EuroDOCSIS 3.0 channels may decrease (phase-out of EuroDOCSIS 3.0 is expected by 2030), so it is recommended that OLOs install EuroDOCSIS 3.1 modems. Using EuroDOCSIS 3.1 technology requires compatible modems to provide high-end internet profiles.

Future HFC transformations.

4. DVB-C Evolutions

Description: The aim is to migrate certain channels and formats from DVB-C to IP for overall capacity planning reasons with a possible DVB-C switch-off in the long run.

Timing: Currently, there are no specific plans, as this is under study and assessment.

Impact: Certain channels or formats will no longer be available in DVB-C format.

5. Distributed Converged Cable Access Platform (D-CCAP)

Description: D-CCAP is introduced to facilitate future EuroDOCSIS services, alleviate capacity restrictions, and address the obsolescence of the current CMTS. It redistributes the physical layer functionality of the CMTS and EdgeQAM to the optical node, transforming the ONU into a Remote PHY Node (RPN).

Timing: Expected start of rollout in Q1-2025.



Impact: D-CCAP should not impact the functioning of EuroDOCSIS cable modems. Testing for interoperability between OLO's EuroDOCSIS modems and the D-CCAP platform might be necessary.

6. Virtual Converged Cable Access Platform (V-CCAP)

Description: V-CCAP is introduced to pave the way for future EuroDOCSIS services, alleviate capacity restrictions, and anticipate the obsolescence of the current CMTS. It builds on the D-CCAP ecosystem but replaces the CMTS with a virtualized platform.

Timing: The roll-out is not expected before end-2026.

Impact: V-CCAP will probably require interoperability testing between the virtualized CMTS and OLO cable modems. As the vCMTS supplier has not yet been selected, specific interoperability requirements cannot be disclosed at this time.

7. EuroDOCSIS upgrades

Description: Further evolution of EuroDOCSIS will be evaluated over the period.

FttH Outlook.

Description: Orange Belgium is conducting a Proof of Concept (POC) for FTTP deployment in the metropolitan areas of Brussels (specifically Ixelles with 5000 Homes passed) and is studying further deployment scenarios in others area's.

Timing: The FTTP deployment started in 2024 and will be extended further in 2025.

Impact: The FTTP will not impact the cable wholesale services provided by VOO.