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Smart Amps, Smarter Networks

A Heavy Reading white paper produced for AOI

AOI | QUANTUM BANDWIDTH®

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EXECUTIVE SUMMARY: SMART AMPS, SMARTER NETWORKS

With cable operators planning to upgrade their outside plant for more spectrum and greater bandwidth, industry vendors are producing and rolling out next-generation amplifiers (amps), nodes, node modules, and related outside plant equipment. Tech suppliers are developing these "smart" amps, nodes, and other products for 1GHz, 1.2GHz, and even 1.8GHz plant upgrades as operators expand their Distributed Access Architecture (DAA) deployments and prepare for potential DOCSIS 4.0 rollouts.

At the same time, cablecos are looking to manage their hybrid fiber-coax (HFC) networks more effectively and efficiently by cutting labor expenses, reducing network downtime, driving down system repair costs, and minimizing the loss of service revenue. They are increasingly interested in leveraging the remote management of their networks (enabled by these smart amps and other devices) to accomplish these tasks.

Carrying out all these next-gen plant upgrades is challenging work, however, for numerous reasons. These reasons include the costs and complexities of:

- Integrating remote management across both legacy and new equipment.
- Gathering all the information needed for remote network management.
- Installing/integrating the new smart equipment into the HFC network.
- Training their workforce to use the new management tools.
- Buying the right smart equipment from vendors, among other things.

Thus, as cable providers begin their smart amp journeys, they must answer some critical questions. Just how smart are these next-gen devices? What will they enable operators to accomplish? Why are they needed now? How do they fit into providers' broader network upgrade plans? What new challenges do they raise for cablecos? How can these challenges be overcome? Where do operators stand in the overall network upgrade process?

To tackle these and other issues, Heavy Reading teamed up with a leading tech supplier, Applied Optoelectronics, Inc. (AOI), to launch a comprehensive research project about smart amps and related next-gen network equipment. Most notably, the project includes an exclusive survey of cable operators and other wireline providers to clarify the role that these devices will play in boosting the efficiency and effectiveness of HFC networks.

In this white paper, Heavy Reading presents the results of that exclusive survey, analyzes the findings, and discusses the implications of the results. We also draw some conclusions about how the cable industry can move forward with smart amps and related next-gen plant equipment.

DEFINING SMART AMPS

Although the benefits of smart amps are quite clear and will be spelled out in this paper, the term itself is not all that clearly defined. It is often conflated with other closely related terms, such as connected amps and intelligent amps, which are not quite the same. As a result, smart amps can mean different things to different people, causing needless confusion.

For the purposes of this study, smart amps are defined in the broadest, simplest way possible. Thus, Heavy Reading defines these HFC network devices as amps that come equipped with automatic setup features. Such features include automatic level and slope control (ALSC) or return follows forward (RFF), both of which require the use of microprocessors and the prevention of plug-in pads or equalizers during initial configuration.

More specifically, smart amps can host Hardware Meets Software (HMS) and DOCSIS transponders but are not outfitted with them as standard features. While the amps can use pre-made configuration files, this process must be performed manually. Plus, to back up the currently used configuration, operators must manually transfer the amp's settings to an external storage location for safekeeping.

Intelligent and connected amps are both considered subsets of smart amps because they offer the same set of attributes outlined above as well as some additional features, such as greater interface and upstream spectrum measurement capabilities. But, since they are just subsets of the larger set, this study focuses on the broader, all-encompassing category of smart amps.

KEY FINDINGS

The following are the key findings from Heavy Reading's smart amps survey.

Benefits and challenges of remote network management

- **Increasing network efficiency and cutting operational costs ranked as the two top benefits of managing HFC networks remotely.** Nearly three-fifths (59%) of survey respondents chose increasing network efficiency, while slightly less than half (46%) picked cutting operational costs.

- **Integrating remote management across legacy and new equipment topped the list of primary challenges in managing HFC networks remotely.** More than half of all survey participants (almost 55%) chose that option. Gathering all the information needed for remote network management finished second with nearly 39%.

- **Not too surprisingly, operators rated the loss of service revenue as the biggest challenge their company faces regarding network downtime and repairs, easily outdistancing the other choices.** More than one-third of respondents (36%) chose the loss of service revenue as the greatest challenge. Tying up technicians and service crews ranked as the second biggest challenge overall, and dealing with customer complaints placed third.

- **Nearly three-quarters of respondents (72%) indicated they are interested in the ability to monitor and manage their HFC network assets remotely, including 32% that are "very interested" in doing so.** Only about 5% of operators said they have no interest in remote network management.

- **When asked how they are carrying out firmware updates/security enhancements, exactly half of all operators (50%) said they are managing the process centrally with remote, automated updates.** At the same time, with multiple answers allowed, nearly half (44%) indicated they are relying on secure, policy-based automated updates, and nearly two-fifths (38%) are leveraging pre-testing updates.

- **Close to half of all respondents (47%) chose automatic gain control for cable/connector degradation as the advanced feature that would improve their network operations the most.** Remote ingress/signal quality management ranked second, garnering votes from nearly one-third (32%) of survey participants.

Network architecture status and upgrade plans

- **Thanks to waves of HFC network upgrades, nearly three-quarters of operators (72%) now have no more than four amps in their HFC network architectures, a significant change from the past.** And about one-third (33%) have just two amps or fewer in their networks.

- **Even though it is not actively in the amp market anymore, Cisco remains the dominant supplier of amps to operators.** Some 70% of survey respondents selected Cisco as the brand of amp their company currently uses, with CommScope (40%) and ATX Networks (34%) trailing far behind.

- **Slightly more than half of all operators (51%) have either started upgrading their networks to a higher order of DOCSIS or plan to do so in the next year.** Plus, nearly one-quarter of respondents (24%) intend to begin the upgrades next year (2026).

- **With several higher orders of DOCSIS technology now available, operators vary widely in their upgrade strategies.** More than one-third of survey participants are considering an upgrade to the Extended Spectrum DOCSIS (ESD) version of DOCSIS 4.0, making that the top choice. But sizable portions are also weighing upgrades to both ESD and the Full Duplex DOCSIS (FDX) variant of DOCSIS 4.0, as well as DOCSIS 3.1 Plus.

- **More than half (54%) of operators have either started upgrading their amps, node modules, and related outside plant products for a higher order of DOCSIS or plan to do so within the next year.** And more than half of the remaining operators intend to begin the upgrade process in 2026.

Remote network management interest and plans

- **Approximately 70% of providers are interested in using predictive analytics for proactive network management, including almost 32% that are "very interested."** Only 4% are not interested at all in leveraging predictive analytics.

- **Optimizing network performance (54%) and minimizing network downtime (51%) rank as the top two ways that operators aim to use predictive analytics to manage their network assets remotely.** More than one-third of respondents (37%) said they will use it to address potential network issues.

- **Amps (52%) and fiber plant (50%) stand out as the HFC plant parts that respondents will upgrade first to remote network management.** Fiber nodes follow closely behind at 49%.

- **Operational costs easily lead the way as the area where remote network management will have the greatest impact on operators' HFC plant.** Nearly half of respondents (47%) ranked it first, and another 18% ranked it second. Workforce staffing follows in second place.

SURVEY DEMOGRAPHICS

This Heavy Reading report reflects the findings of a web-based survey of cable operators, fixed line telecom providers, and fiber providers worldwide conducted during the fall of 2024. Respondents were drawn from the network operator list of the Light Reading readership database. After reviewing responses, 108 were deemed qualified participants and were counted in the results.

To qualify, respondents had to work for a verifiable network operator and be a primary decision maker, directly involved in business strategy, directly involved in technical design and operations, directly involved in purchasing, or familiar with their company's strategy. Additional screening was conducted to remove incomplete surveys and bad responses.

The full survey demographics are detailed in **Figure 1**.

Figure 1: Survey response demographics

Where is your organization headquartered?

- US — 48.1%
- Canada — 16.7%
- Europe — 14.8%
- Central/South America (including Mexico and the Caribbean) — 11.1%
- Asia Pacific (including Australia) — 7.4%
- Middle East/Africa — 1.9%

What are your organization's approximate annual revenues (USD)?

- Less than $10 million — 5.6%
- $10 million to $99 million — 6.5%
- $100 million to $499 million — 13.9%
- $500 million to $999 million — 13.9%
- $1 billion to $5 billion — 25.0%
- More than $5 billion — 35.2%

What type of service provider do you work for?

- Fixed line telecom operator, 37.0%
- Cable operator, 36.1%
- Fiber provider, 26.9%

What is your primary job function?

- R&D or technical strategy — 29.6%
- Network planning & engineering — 25.9%
- IT & cloud — 17.6%
- Network operations — 7.4%
- Corporate management — 6.5%
- Business strategy/planning — 5.6%
- Product purchasing — 4.6%
- Sales & marketing — 0.9%
- Other — 1.9%

How involved are you in your company's smart amp strategy, design, and/or purchasing?

- Directly involved in technical design and operations — 30.6%
- Primary decision maker — 28.7%
- Directly involved in business strategy — 25.0%
- Directly involved in purchasing — 1.9%
- Familiar with strategy — 13.9%

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Note: Numbers in figures throughout this report may not total 100 due to rounding.
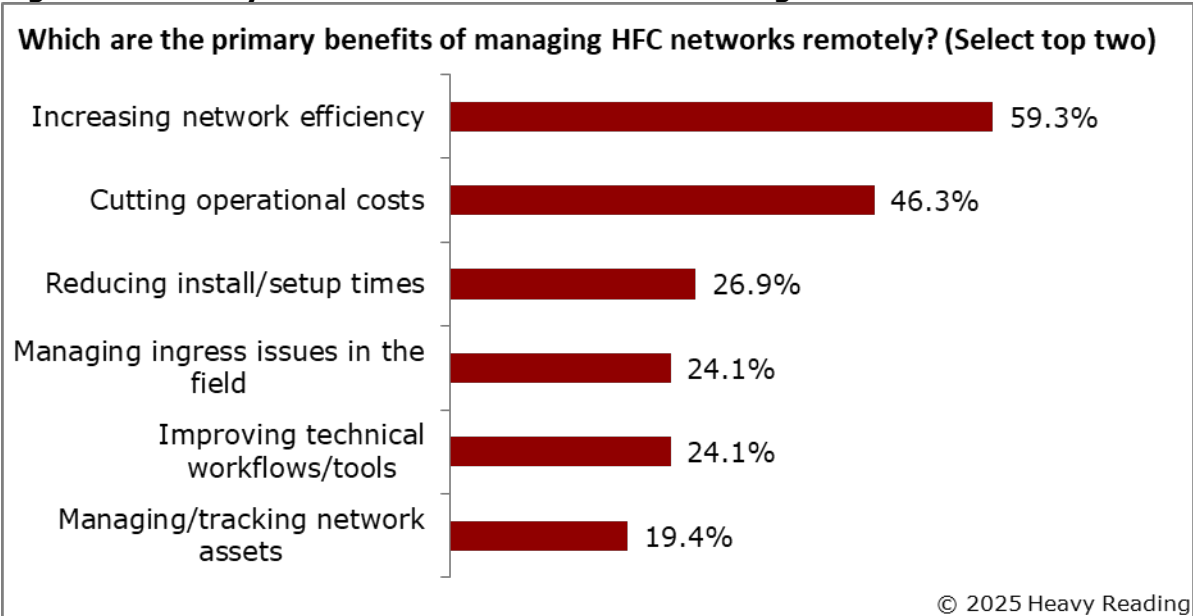n=108
Source: Heavy Reading

BENEFITS AND CHALLENGES OF REMOTE NETWORK MANAGEMENT

This Heavy Reading survey started out by looking at the benefits of managing the cable industry's HFC networks remotely. Notably, increasing network efficiency and cutting operational costs ranked as the two top benefits of remote network management, as shown in **Figure 2**.

Three-fifths (59%) of survey respondents chose increasing network efficiency as a key benefit, while slightly less than half (46%) picked cutting operational costs. No other choices came close to matching those two.

These results are not unexpected. In additional surveys conducted by Heavy Reading and other research firms, increasing network efficiency and cutting operational costs have consistently stood out as the top priorities of cable operators and other wireline providers. Thus, it makes sense that operators are drawn to remote network management because of its potential to help them achieve those two overriding goals.

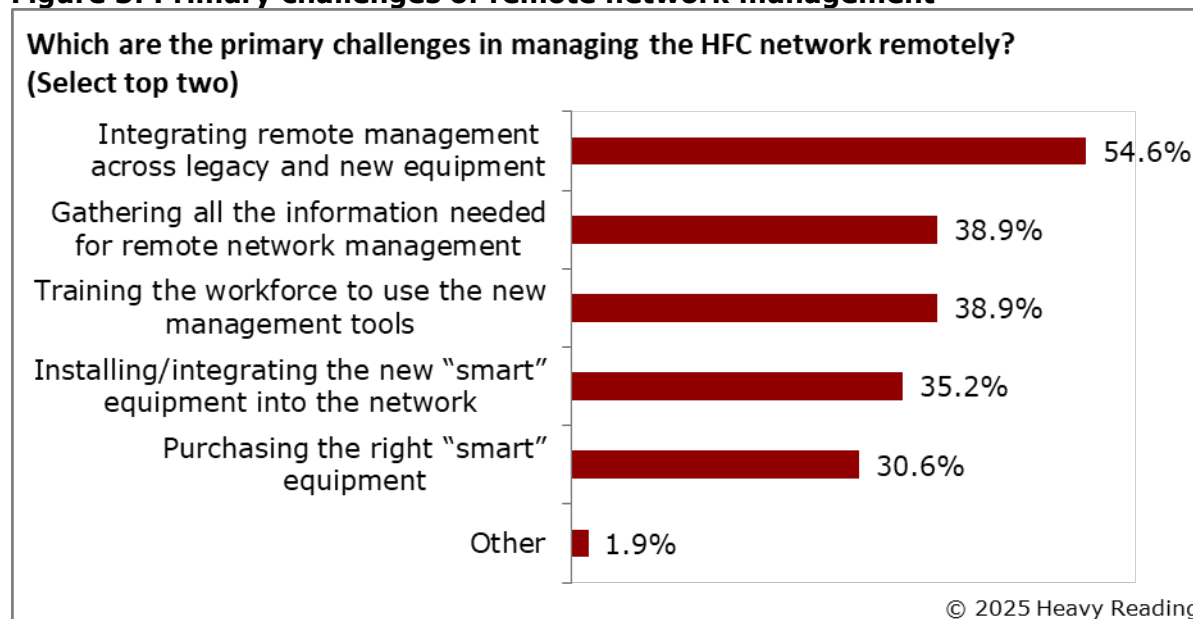**Figure 2: Primary benefits of remote network management**

Which are the primary benefits of managing HFC networks remotely? (Select top two)

Increasing network efficiency	59.3%
Cutting operational costs	46.3%
Reducing install/setup times	26.9%
Managing ingress issues in the field	24.1%
Improving technical workflows/tools	24.1%
Managing/tracking network assets	19.4%

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Source: Heavy Reading

Moving on, the survey examined the primary challenges of remote network management. Integrating remote management across legacy and new equipment topped the list of primary challenges in managing the HFC network remotely.

Specifically, more than half of the survey participants (almost 55%) chose that option, making it the lead choice. Gathering all the information needed for remote network management and training the workforce to use the new management tools tied for second with nearly 39%. The two other choices lagged behind the three leaders, as depicted below in **Figure 3**.

These results are also in line with expectations because integrating next-gen technologies into legacy networks is always a major issue for cable and other wireline network providers due to the expense and time involved. That is why it will likely take up to a decade for the industry to adopt smart amps in its networks on a wide scale.

Figure 3: Primary challenges of remote network management

Which are the primary challenges in managing the HFC network remotely? (Select top two)

Challenge	Percentage
Integrating remote management across legacy and new equipment	54.6%
Gathering all the information needed for remote network management	38.9%
Training the workforce to use the new management tools	38.9%
Installing/integrating the new "smart" equipment into the network	35.2%
Purchasing the right "smart" equipment	30.6%
Other	1.9%

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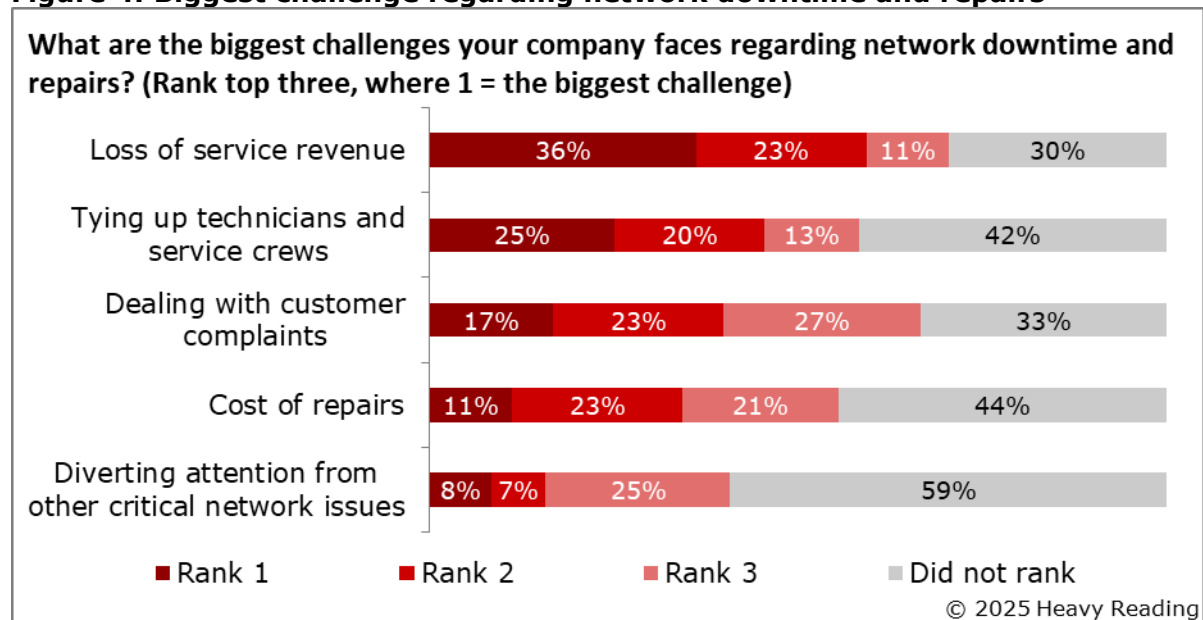n=108
Source: Heavy Reading

Sticking with the "challenges" theme, the study pivoted to asking respondents about the biggest challenge that their company faces regarding network downtime and repairs. Understandably, operators rate the loss of service revenue as the single greatest challenge, easily outdistancing the other choices. More than one-third of respondents (36%) chose loss of service revenue as the single greatest challenge; tying up technicians and service crews (25%) and dealing with customer complaints (17%) followed.

The loss of service revenue also ranked highly among those that picked another challenge as the biggest one. 23% of operators chose it as the second greatest challenge, as seen in **Figure 4** below. The same percentage also selected the cost of repairs and dealing with customer complaints as the second biggest challenge they face.

These results are not surprising because operators naturally dread the loss of service revenue above all other concerns. They also struggle with handling customer complaints, constantly trying out new systems to deal with them.

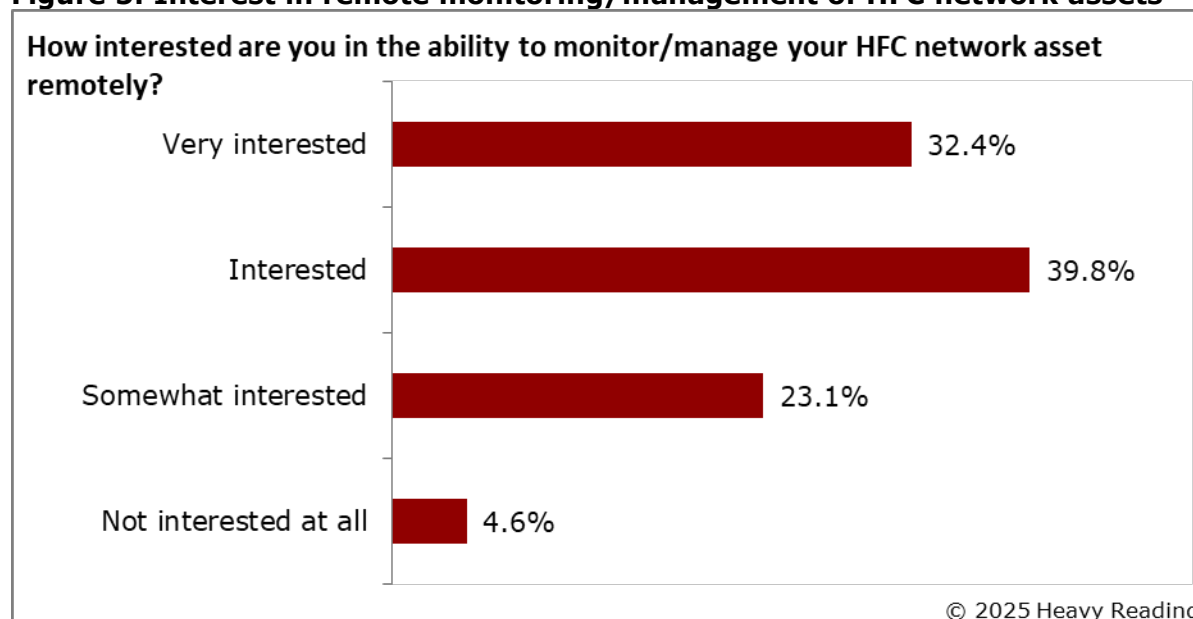**Figure 4: Biggest challenge regarding network downtime and repairs**

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Source: Heavy Reading

Next, the survey looked at the level of operator interest in the ability to monitor and manage their HFC network assets remotely. Nearly three-quarters of respondents (72%) indicated that they are interested in this capability, including 32% that are "very interested" in doing so, as depicted in **Figure 5** below.

Further, nearly one-quarter of respondents (23%) are "somewhat interested" in monitoring and managing their network assets remotely. Such strong favorable results are to be expected, given the potential benefits of remote network management.

In contrast, only about 5% of operators said they have no interest at all in remote network management. Why they have no interest is not clear. But it might be because they are smaller service providers with less of a pressing need for remote network management as well as less capital to spend on it.

Figure 5: Interest in remote monitoring/management of HFC network assets

How interested are you in the ability to monitor/manage your HFC network asset remotely?

- Very interested — 32.4%
- Interested — 39.8%
- Somewhat interested — 23.1%
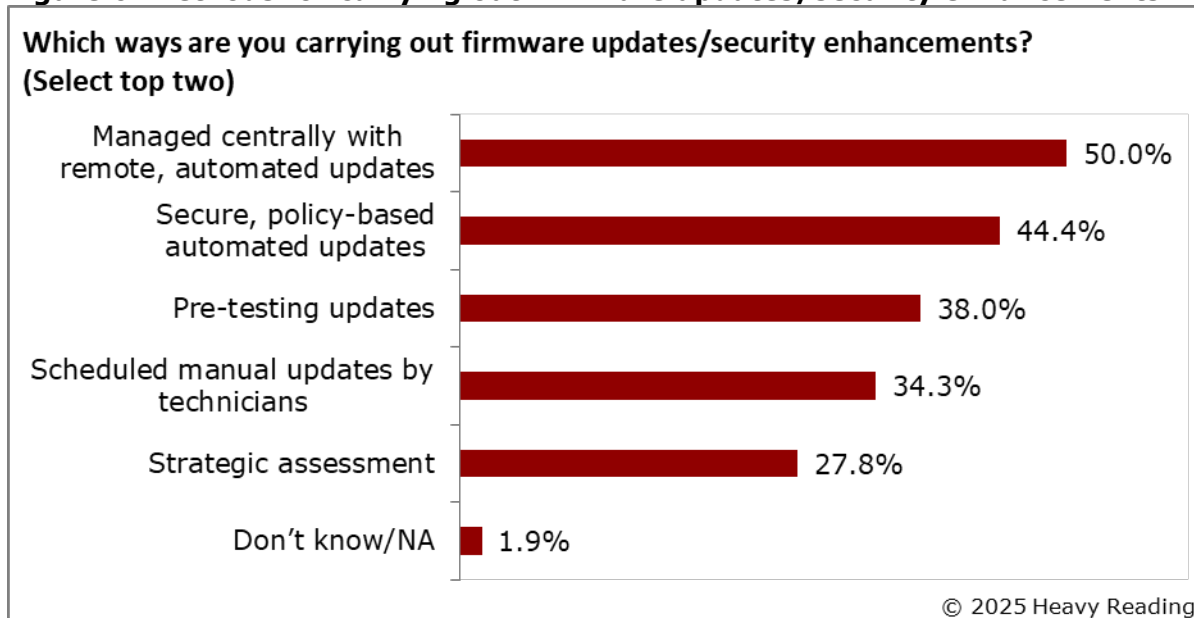- Not interested at all — 4.6%

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n=108
Source: Heavy Reading

The study moved on to the question of firmware updates and related security enhancements because they go hand-in-hand with network upgrades. Heavy Reading sought to determine how operators are carrying out firmware updates/security enhancements to their networks.

Notably, exactly half of all operators (50%) said they are managing this process centrally with remote, automated updates. At the same time, with two answers allowed, nearly as many operators (44%) indicated they are relying on secure, policy-based automated updates. Plus, nearly two-fifths (38%) are leveraging pre-testing updates, as shown in **Figure 6** below.

These results indicate that service providers are trying out a number of different approaches for updating their firmware and enhancing their network security, with no approach proving dominant just yet. But the results also show that the strongest interest is in managing the process centrally with automated updates. This preference seems bound to grow as the complexity of these networks continues to increase.

**Figure 6: Methods for carrying out firmware updates/security enhancements**

Which ways are you carrying out firmware updates/security enhancements? (Select top two)

Method	Percentage
Managed centrally with remote, automated updates	50.0%
Secure, policy-based automated updates	44.4%
Pre-testing updates	38.0%
Scheduled manual updates by technicians	34.3%
Strategic assessment	27.8%
Don't know/NA	1.9%

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Turning away from security concerns, the study shifted its focus to network operations issues. With this question, Heavy Reading aimed to learn which advanced feature would improve network operations the most.

Close to half of all respondents (47%) chose automatic gain control for cable/connector degradation as the advanced feature that would improve their network operations the most, making that the clear favorite. Remote ingress/signal quality management ranked second, garnering votes from nearly one-third (32%) of survey participants. Precision geo-locating/historical setup tracking came in third place with 20%, as seen in **Figure 7** below.

Figure 7: Advanced feature that would improve network operations the most

What advanced feature would improve your network operations the most?

Feature	Percentage
Automatic gain control for cable/connector degradation	47.2%
Precision geo-locating/historical setup tracking	20.4%
Remote ingress/signal quality management	31.5%
Other	0.9%
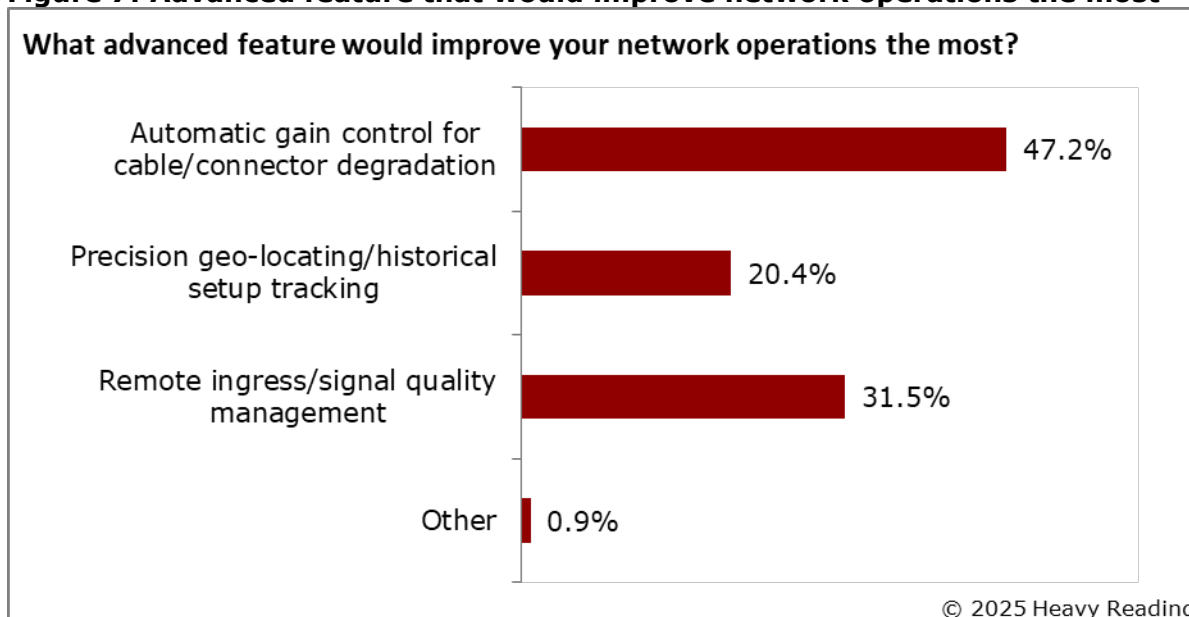
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Source: Heavy Reading

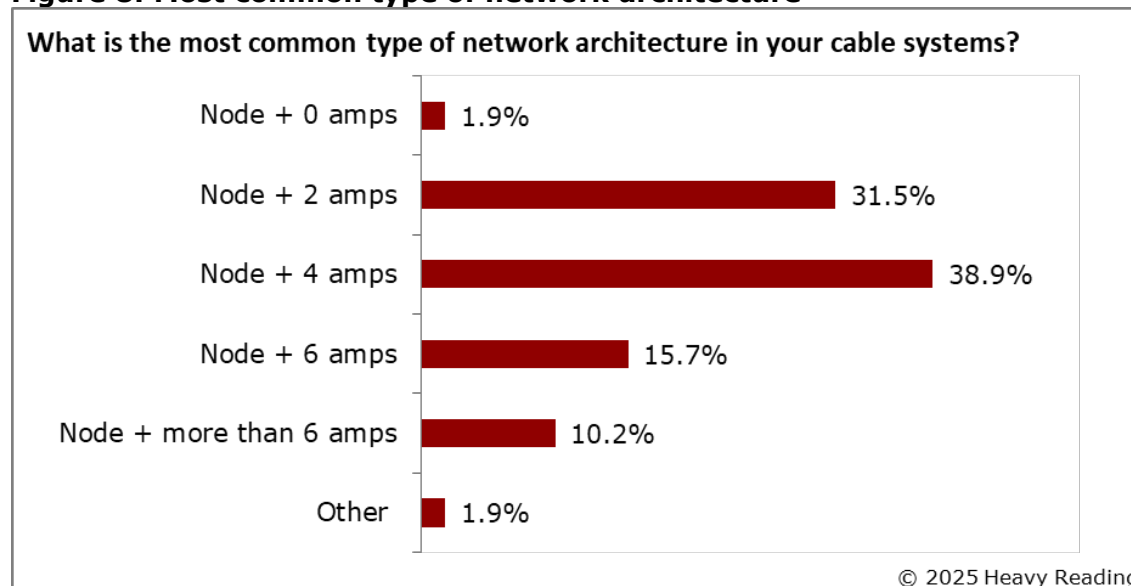# NETWORK ARCHITECTURE STATUS AND UPGRADE PLANS

In this second section, Heavy Reading looked at how service providers plan to upgrade their networks to prepare them to meet future customer and bandwidth demands. To set a baseline for these planned upgrades, the survey first focused on where operators stand now with their network architectures.

What we found is that operators have made significant progress in updating their HFC networks in recent years. Thanks to several waves of network upgrades, nearly three-quarters of operators (72%) now have no more than four amps in their network architectures, as shown in **Figure 8** below. That represents a significant change from the past.

Moreover, about one-third (33%) of survey participants have just two amps or fewer in their networks. And about 2% have no amps in their networks at all.

On the other side of the ledger, slightly more than one-quarter of operators (26%) still have six amps or more in their networks. But that percentage is down significantly from the number even five years ago, when networks were far more congested with amps.

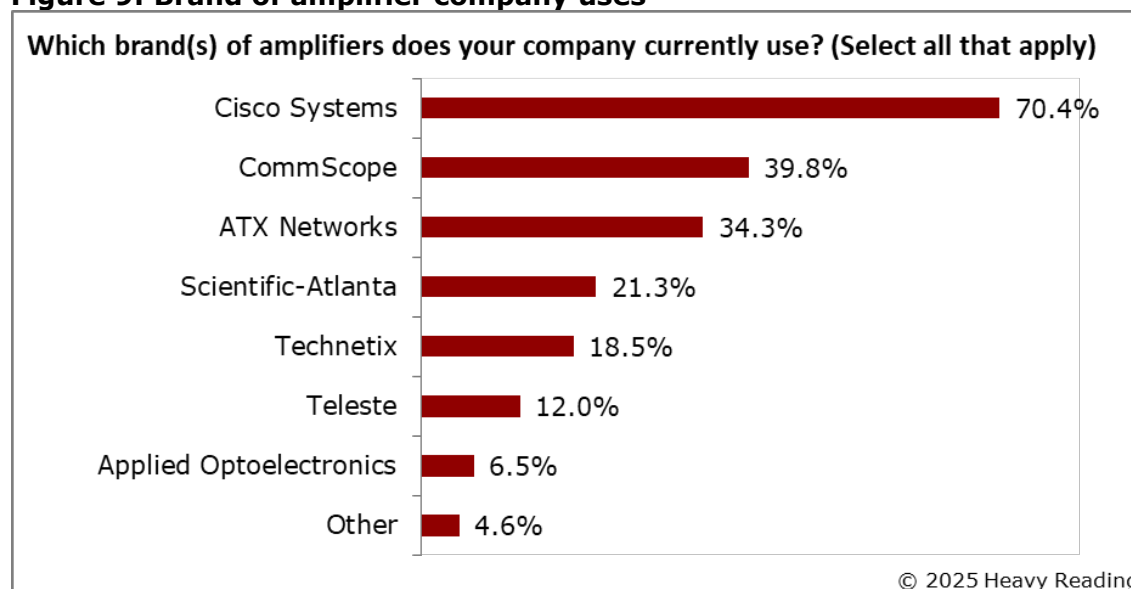**Figure 8: Most common type of network architecture**

What is the most common type of network architecture in your cable systems?

Architecture	Percentage
Node + 0 amps	1.9%
Node + 2 amps	31.5%
Node + 4 amps	38.9%
Node + 6 amps	15.7%
Node + more than 6 amps	10.2%
Other	1.9%

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Which vendor reigns in the amp space? Somewhat unexpectedly, Cisco Systems remains the dominant supplier of amps to the cable industry—even though it is not actively in the amp market anymore.

In fact, 70% of survey respondents selected Cisco as the brand of amp their company currently uses. CommScope (40%) and ATX Networks (34%) trailed far behind in second and third place, respectively, as shown in **Figure 9**.

Figure 9: Brand of amplifier company uses

Which brand(s) of amplifiers does your company currently use? (Select all that apply)

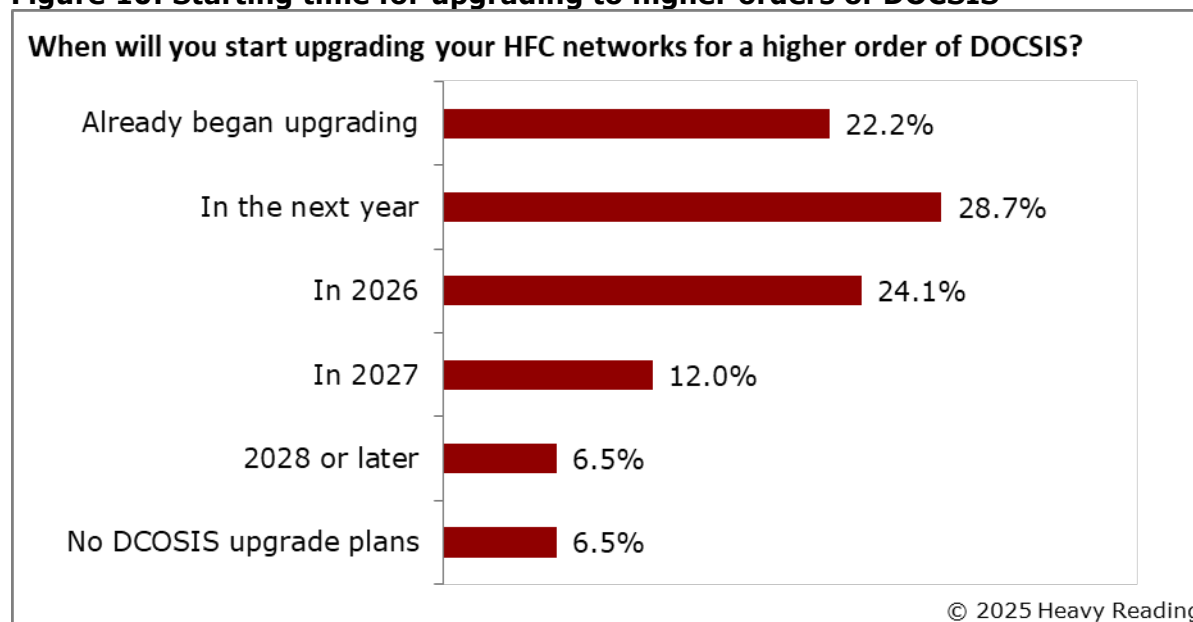| Brand	Percentage
Cisco Systems	70.4%
CommScope	39.8%
ATX Networks	34.3%
Scientific-Atlanta	21.3%
Technetix	18.5%
Teleste	12.0%
Applied Optoelectronics	6.5%
Other	4.6%

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Source: Heavy Reading

Next, Heavy Reading asked survey participants when their company intends to start upgrading its networks to one or more of the higher orders of DOCSIS—namely DOCSIS 3.1 Plus, DOCSIS 4.0 FDX, and DOCSIS 4.0 ESD. Notably, many have already started upgrading their networks or plan to do so within the next two years.

Specifically, slightly more than half of all operators (51%) have either started upgrading their networks to a higher order of DOCSIS or plan to do so in the next year, as shown in **Figure 10**. Plus, nearly one-quarter of respondents (24%) intend to begin the upgrades next year (2026). That leaves just one-quarter of respondents that plan to wait until 2027 or later or do not have any upgrade plans at all yet.

These strong results are impressive, showing just how serious most operators are about upgrading their network capacities and broadband speeds in response to continued consumer demand. The key questions are: How many providers will continue to upgrade their networks to higher orders of DOCSIS? And how many will ditch or stop expanding their legacy HFC networks and switch to all-fiber lines and PON technology—as major cablecos such as Altice USA are already doing?

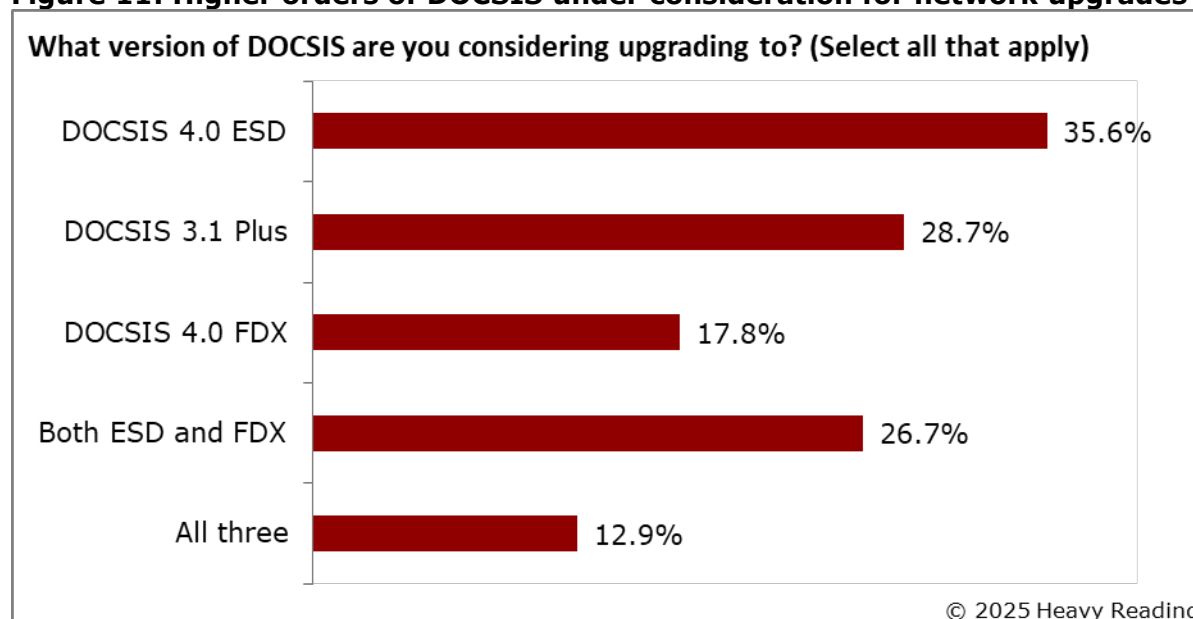**Figure 10: Starting time for upgrading to higher orders of DOCSIS**

When will you start upgrading your HFC networks for a higher order of DOCSIS?

Already began upgrading	22.2%
In the next year	28.7%
In 2026	24.1%
In 2027	12.0%
2028 or later	6.5%
No DCOSIS upgrade plans	6.5%

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Source: Heavy Reading

With several higher orders of DOCSIS technology now available for use, operators vary widely in their network upgrade strategies. Some aim to deploy DOCSIS 3.1 Plus, some intend to roll out the FDX version of DOCSIS 4.0, some favor the ESD flavor of DOCSIS 4.0, and a number of operators are planning to do a mix of two or three of these options.

More than one-third of survey participants are considering an upgrade to the ESD version of DOCSIS 4.0, making that the top choice. But sizable portions are also weighing upgrades to both ESD and the FDX variant of DOCSIS 4.0, as well as DOCSIS 3.1 Plus, as depicted below in **Figure 11**.

Figure 11: Higher orders of DOCSIS under consideration for network upgrades

What version of DOCSIS are you considering upgrading to? (Select all that apply)

Version	Percentage
DOCSIS 4.0 ESD	35.6%
DOCSIS 3.1 Plus	28.7%
DOCSIS 4.0 FDX	17.8%
Both ESD and FDX	26.7%
All three	12.9%

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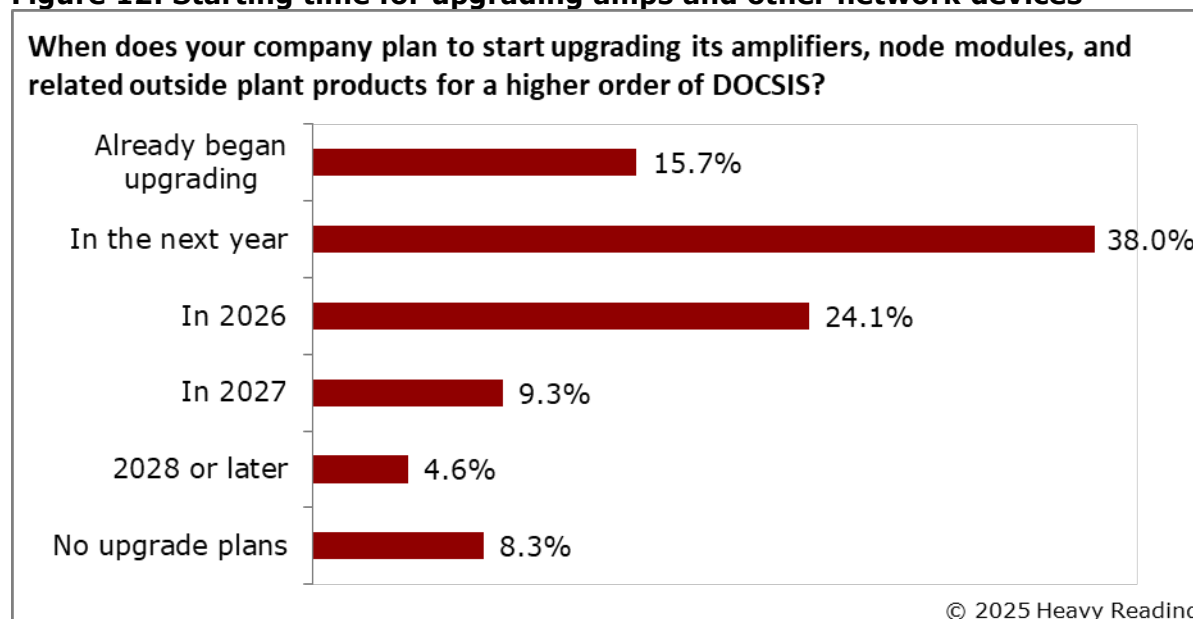
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Source: Heavy Reading

In line with their plans for upgrading their networks to higher orders of DOCSIS technology, Heavy Reading asked survey participants about their intentions to upgrade their network equipment as well. In particular, we sought to discover their plans for upgrading their amps to next-gen smart amps.

Significantly, more than half (54%) of operators have either already started upgrading their amps, node modules, and related outside plant products for a higher order of DOCSIS or plan to do so within the next year. Further, more than half of the remaining operators intend to begin the upgrade process in 2026, as shown in **Figure 12** below.

This means that less than one-quarter of operators (22%) will either wait until 2027 or later to start the upgrade process or do not intend to upgrade their amps, node modules, and related equipment at all. So, a major transformation of HFC network architecture is well underway—just like what has occurred in past decades.

As a result, smart amps will likely be a dominant force in the industry by the end of this decade. It will be intriguing to see how close they come to realizing their promise.

Figure 12: Starting time for upgrading amps and other network devices

When does your company plan to start upgrading its amplifiers, node modules, and related outside plant products for a higher order of DOCSIS?

Category	Percentage
Already began upgrading	15.7%
In the next year	38.0%
In 2026	24.1%
In 2027	9.3%
2028 or later	4.6%
No upgrade plans	8.3%

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Source: Heavy Reading

REMOTE NETWORK MANAGEMENT INTEREST AND PLANS

In this closing section, the Heavy Reading study turned its attention to operators' interest in remote network management and their plans for carrying it out. The survey sought to find out which approaches operators are considering, where they plan to implement those approaches first, and what they see as the biggest potential benefits of remote network management.

The first question of this section focused on predictive analytics. Heavy Reading aimed to discover how many service providers are interested in using predictive analytics for proactive network management.
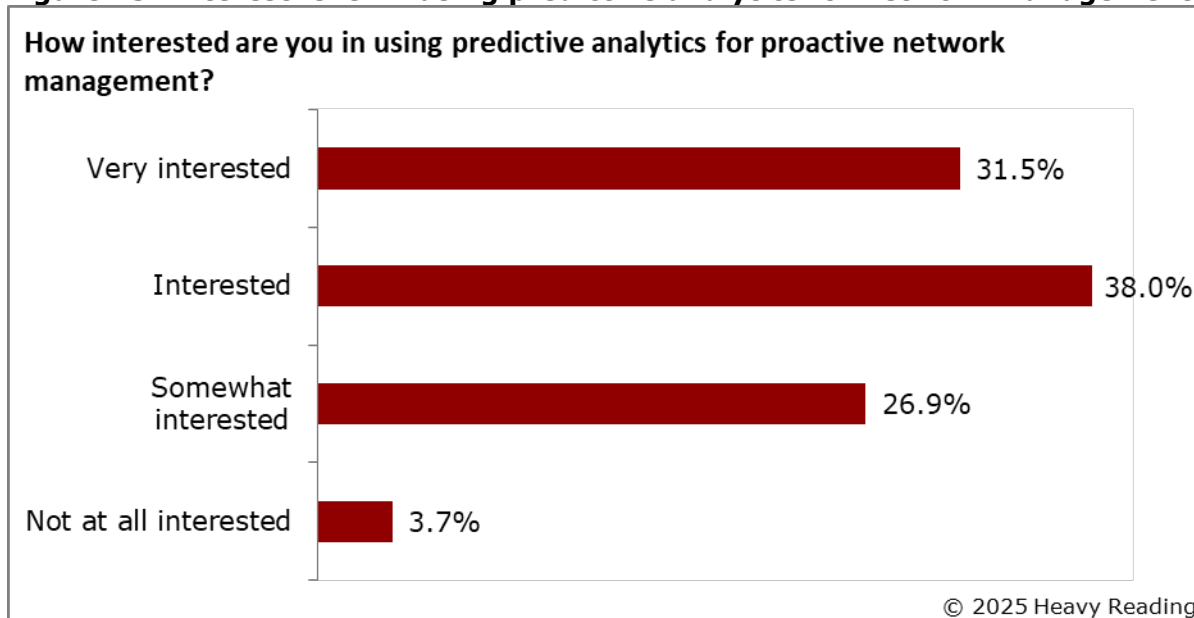
As it turns out, most are. Nearly 70% of providers are interested in using predictive analytics, including almost 32% that are "very interested," as shown below in **Figure 13**. Another 27% are "somewhat interested," leaving just 4% that are not interested at all in leveraging this technique.

These results come as no surprise because predictive analytics is widely touted as an ideal way to use data to forecast trends and predict future outcomes. The tool leverages data analysis, machine learning, artificial intelligence, and statistical models to find patterns and predict future customer behavior. Operators need this kind of data to know how and when to upgrade their networks.

Yet, it is still impressive to witness just how strong the industry's interest levels in predictive analytics are. What will happen when operators start using this tool en masse?

Figure 13: Interest level in using predictive analytics for network management


How interested are you in using predictive analytics for proactive network management?

- Very interested: 31.5%
- Interested: 38.0%
- Somewhat interested: 26.9%
- Not at all interested: 3.7%

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Source: Heavy Reading

Honing in on how operators intend to use predictive analytics in their networks, the survey queried participants about their plans. Operators chose optimizing network performance (54%) and minimizing network downtime (51%) as the top two ways that they aim to leverage predictive analytics for managing their network assets remotely, as seen in **Figure 14** below.

More than one-third of survey respondents (37%) indicated that they will use predictive analytics to address potential network issues. Slightly less than one-third (32%) said they will tap into it to optimize resource allocation, and one-fifth (20%) of respondents intend to use predictive analytics to better anticipate customer needs.

Figure 14: Use of predictive analytics in remote network management

How will you primarily use predictive analytics in managing your network assets remotely? (Select top two)

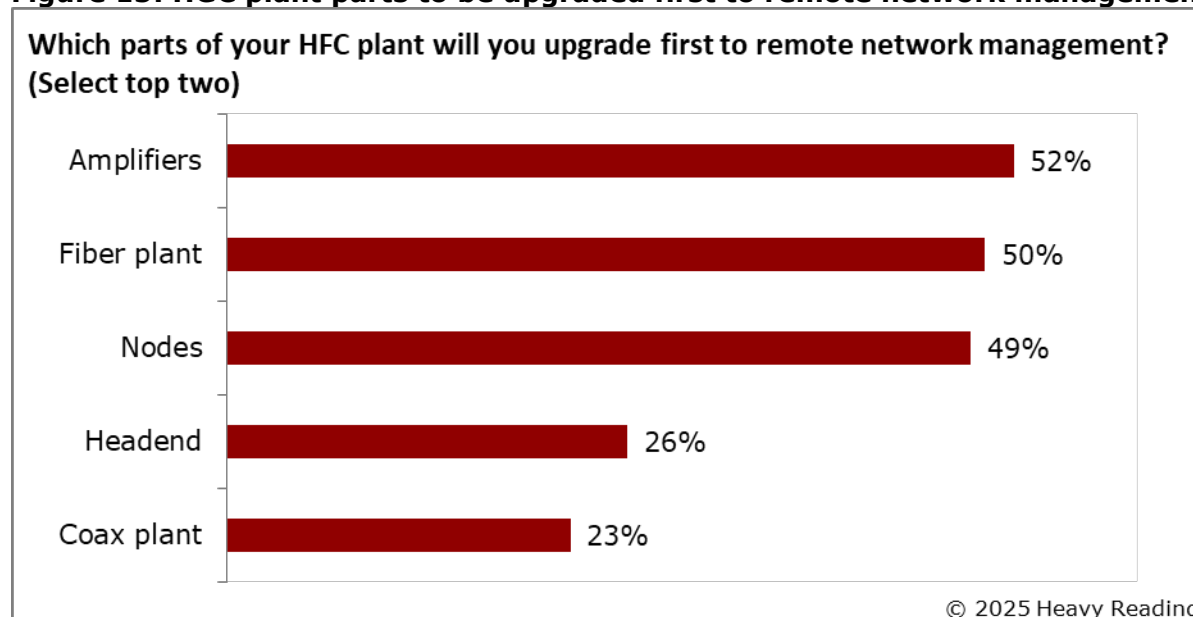| Category	Percentage
Optimize network performance	53.7%
Minimize network downtime	50.9%
Address potential network issues	37.0%
Optimize resource allocation	31.5%
Anticipate customer needs	20.4%
Other	0.9%
No plans to use	2.8%
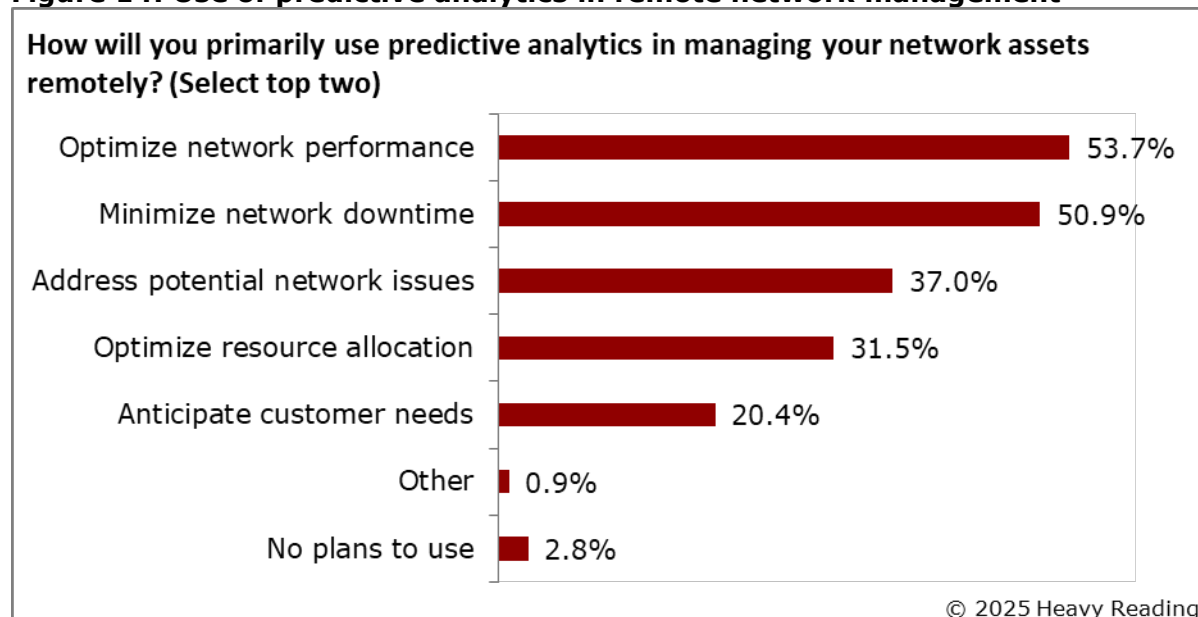
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Source: Heavy Reading

Next, the study looked at which parts of the HFC plant will be upgraded first for remote network management capability. The idea was to discover operators' priorities for updating their networks.

Network amps emerged as the top priority, with slightly more than half of all respondents (52%) choosing that option. With respondents allowed to pick two choices, fiber plant followed closely behind, with exactly one-half of survey participants (50%) picking it.

Fiber nodes followed closely behind the two leaders, with 49% of respondents checking that box. The cable headend and coax plant trailed far behind the top three, as shown in **Figure 15** below.

Figure 15: HGC plant parts to be upgraded first to remote network management

Which parts of your HFC plant will you upgrade first to remote network management? (Select top two)

- Amplifiers: 52%
- Fiber plant: 50%
- Nodes: 49%
- Headend: 26%
- Coax plant: 23%

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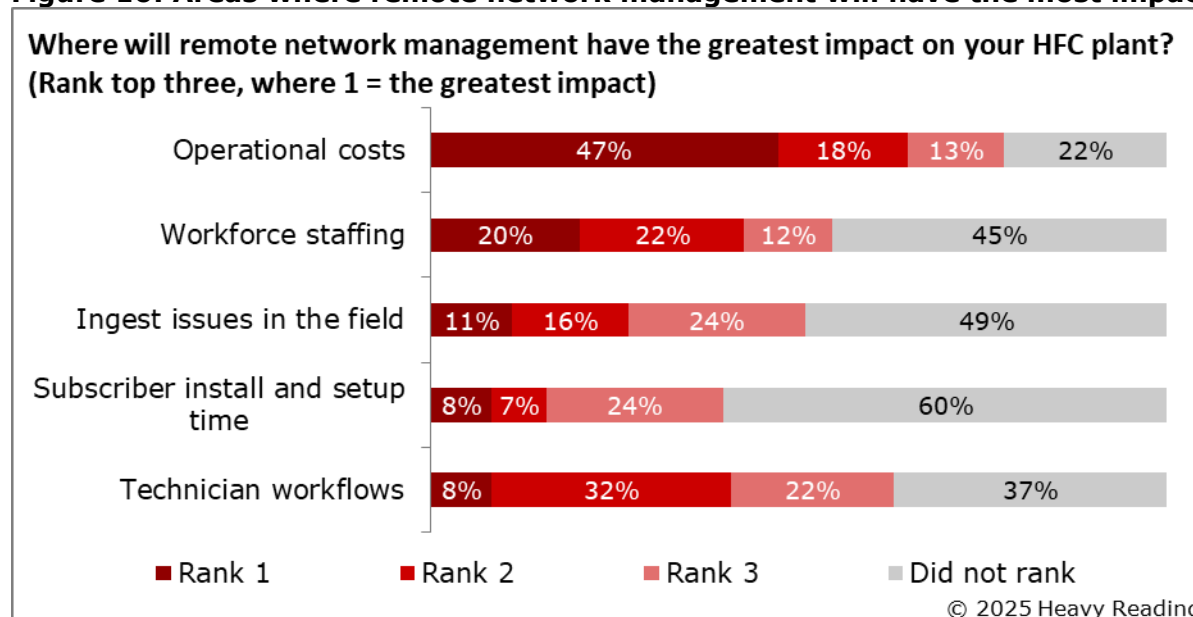n=106
Source: Heavy Reading

Finally, the survey closed with a question about where remote network management will have the greatest impact on operators' HFC plants. Survey participants were given five choices and asked to rank the top three.

Operational costs easily stood out as the area where remote network management will have the greatest impact, with nearly half of respondents (47%) ranking it first and another 18% ranking it second. No other area came close, as depicted in **Figure 16** below.

Workforce staffing came in a strong second, with 20% of survey participants ranking it first and 22% ranking it second. Technician workflows beat out the other options for third place, with just 8% ranking it first but 32% ranking it second.

While operational costs led the pack, they did not dominate the field as much as might be expected, given operators' overriding interest in cutting costs and boosting network efficiencies. That might be because two other choices—workforce staffing and technician workflows—can also be grouped under the rubric of cutting costs and increasing network efficiencies. In that light, it is clear once again that providers are primarily looking to use remote network management to reduce their operations costs and run them more efficiently.

Figure 16: Areas where remote network management will have the most impact

Where will remote network management have the greatest impact on your HFC plant? (Rank top three, where 1 = the greatest impact)

	Rank 1	Rank 2	Rank 3	Did not rank
Operational costs	47%	18%	13%	22%
Workforce staffing	20%	22%	12%	45%
Ingest issues in the field	11%	16%	24%	49%
Subscriber install and setup time	8%	7%	24%	60%
Technician workflows	8%	32%	22%	37%

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n=108
Source: Heavy Reading

CONCLUSION

As this Heavy Reading study shows, remote network management is no longer just a futuristic concept for cable operators and other wireline service providers. Indeed, its time has come. The industry's interest level in remote network management is high, as operators see huge benefits in pursuing it.

In fact, as this study reveals, nearly three-quarters of operators (72%) are interested in the ability to monitor and manage their network assets remotely. Moreover, nearly one-third (32%) are very interested in leveraging remote network management.

Further, network amps stand out as the top priority for upgrades to remote management capability. In the survey, slightly more than half of all respondents (52%) chose that option.

Service providers are so enthralled with remote network management because they relish the potential to boost network efficiencies while also slashing their operational expenses. They also point to other expected prime benefits, such as reducing installation and setup times.

Providers realize that they face hefty hurdles in making remote network management work. In the survey results, for example, respondents cited integrating remote management across both legacy and new equipment as their chief challenge, followed by gathering all the information required to support remote management.

But even with these hurdles, operators are eager to launch their remote network management journeys. It would be instructive to conduct this survey again in a couple of years to determine just how far they have gotten.