# Telehealth Business Case for Cable Operators

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## What is the problem?

How big is the Telehealth opportunity for cable operators? What are the financial considerations from revenue and cost points of view?

## Key Takeaways

We make the following recommendations to operators:

- Telehealth opens door for multiple stakeholders

- Profitability will reach 100s of billions

- Operators need to build inter-industry collaborations.

- Their reward depends on the amount of risk the operators are willing to take.

Key words: Telehealth, TH, Telecom for Healthcare, Unified Communications, Data Hosting

## Executive Summary

As the years have progressed in the US, the amount of healthcare spending has also significantly risen. In 2018, it reached upwards of $3.6 Trillion [1]. One way to combat that spending is the use of Telehealth (TH) solutions. Telehealth is the idea of using telecommunication services to provide healthcare to any individual regardless of location. It can encompass everything from physician visits to educational tools, but at its heart Telehealth depends on the progress telecom operators have made.

This past year during COVID-19, we have seen a 175x increase in Telehealth adoption [2]. COVID has highlighted the many benefits of Telehealth:

- Saving travel/visit cost
- Less travel time
- Safer to take visits from home

Telehealth not only impacts the individual patient, but also family homes, elders, caregivers, and healthcare providers. Each of these stakeholders has its place in Telehealth and are key players when considering how to enter the market or when creating solutions. However, with the explosion in Telehealth needs during the pandemic the space has also become highly fragmented with few unifying solutions. MSOs have a chance to **unify the Telehealth space**.

Since MSOs have already developed infrastructure for audio/video communication, smart devices, IoT, etc. they already have a leg up on other companies. To expand beyond just the basic needs, we have defined four offerings for MSOs to consider:

- **Basic Telehealth:** *Basic Telehealth* offered services that would help maintain audio or video communication between patients and providers. The goal is to provide services to users regardless of location.
- **Security:** A *Security* offering is dependent on the security level needed. One needs to consider if Health Insurance Portability and Accountability Act (HIPAA) or Protected Health Information (PHI) plays a role in the offering.
- **Analytics:** The *Analytics* offering would provide analysis and visualization of medical data.
- **Install and Support (IandS):** Providing an *IandS* offering is dependent on the individual stakeholders' needs.

Each of these offerings considers MSO's current and future capabilities while addressing the need of the market. They are innately flexible so that they can be changed around to fit whatever model the MSO company sees fit for themselves. From our research, we were able to project the market size, revenue, cost, and profits. The cost areas we considered were premise, service offering, operations, training, and overhead cost. From these projections in 2030, operators could see around $109.5Bn in profits.

MSOs have a competitive advantage with their established customer base, communication infrastructure, hosting/analytics capabilities, and support structures. With strategic partnerships in the Telehealth space, operators have a low barrier to entry while being able to quickly capture a large Telehealth market. Not only will operators have a chance to expand their portfolio, but also create a valuable healthcare impact in this growing market space.

## Introduction

As healthcare spending increases in the US ($74B in 1970 to $3.6T in 2018), it opens up room for technology to reduce wastage, decrease cost, and increase productivity [3]. In many cases, Telehealth solutions have entered the space as a way to address some of the inefficiencies of the current healthcare system. For example:

- Access to quality medical care to all communities.
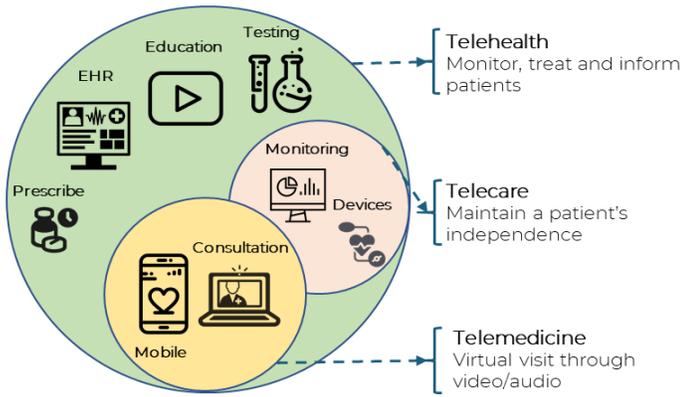
Figure 1 Summary of Telehealth and other related services

- Reduce time and money spent traveling to medical facilities.

- Providing continued care across different physicians for chronic disease patients.

- Controlling costs from no-show patients

Telehealth is a virtual service that encompasses both Telemedicine and Telecare. Unlike Telemedicine, Telehealth goes beyond video/audio communication. It incorporates Electronic Health Records (EHR), education, testing, etc. Telecare allows patients to take care of their medical needs virtually through medical devices or monitoring services. The diagram above (details available here) highlights how these three services interact in the realm of virtual healthcare.

Because of the COVID-19 pandemic, many Telehealth legislative barriers were lifted to accommodate the social changes that were happening around us. Some such barriers included relaxing state physician licensing laws, CMS restrictions on location, HIPAA flexibility on technology, etc. [4]. With these relaxations, Telehealth technology was allowed to grow at an incredible rate; 2020 has seen a 175x [1] increase in Telehealth adoption which has also led to a fragmented market. As the benefits of Telehealth become clearer, MSOs have an opportunity to expand their presence in Telehealth.

Telehealth has always used telecommunications within their solutions, but with advancements in technology (5G wireless, 10G wireline access networks, etc.) and increased availability, MSOs can work to unify the Telehealth space. With their expertise in broadband, established customer relations, hosting capabilities, and service management, MSOs can cater to Telehealth solutions to their
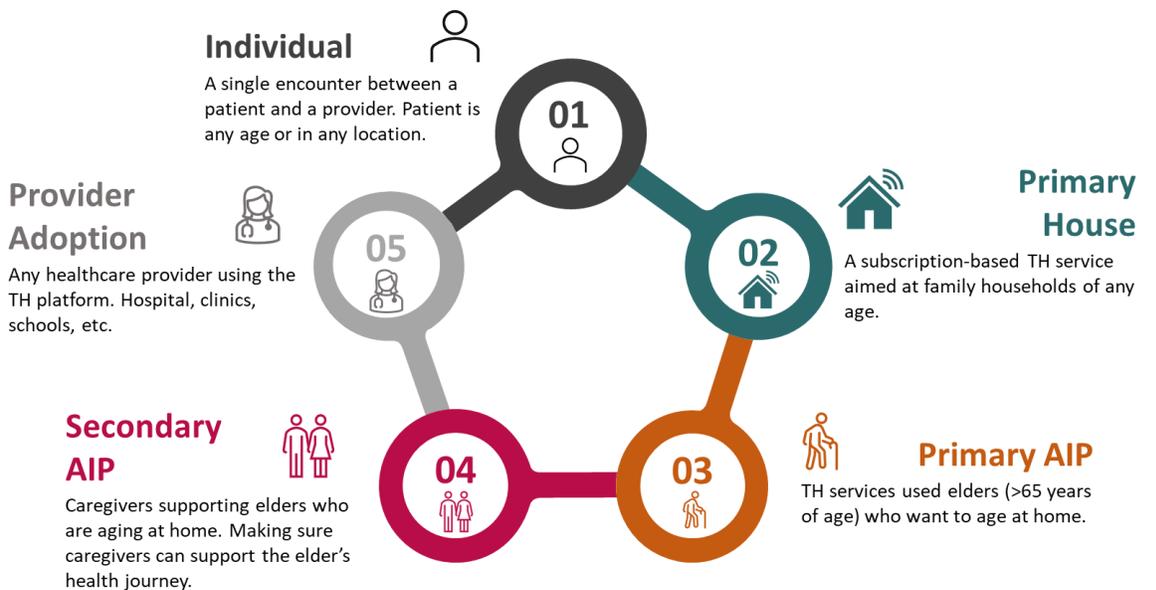


Figure 2 Different stakeholders an operators can address with their Telehealth solutions

strengths while unifying existing solutions. This paper will focus on different potential business models that MSOs can follow to target the Telehealth market, as well as make a case for why MSOs are a natural fit for advancing Telehealth solutions.

## Market Sizing

To understand the Telehealth market, we identified a few key stakeholders: *individuals, primary house, primary AIP, Secondary AIP, and Provider Adoption.* Figure 2 shows a variety of markets that operators can tap into to provide Telehealth services.

**Individual:** Single encounters are the main target for stakeholders for Telehealth solutions, we identified this as Individual. Before COVID-19, CDC reported the number of Telehealth visits was increasing at an average compound growth rate of 50% per year; however, during COVID-19 there was an increase in the need to shift to virtual care for safety and convenience's sake. This shift pushed Telehealth visits up 154% (approximately 1.6M Telehealth encounters) by the end of March 2020 when compared to that same period in 2019 [5]. The number of individual patients that said they use telehealth went up from 11% in 2019 to 46% in 2020 [2]. While the number of overall Telehealth visits is declining after the initial excitement, many walls have been knocked down because of the pandemic. It opened the door for other markets/stakeholders to benefit from Telehealth services. Some of the stakeholders we address are household families, elderly, elderly caregivers, and providers.

**Primary House:** Primary House addresses how family households will use Telehealth services. The 2020 census reported a total of 83.7M households in the US with an average age of 50 years [6]. Since encounters typically involve just a single individual, we expect that only a fraction (estimated ~10-15%) of households will initially aim for a family Telehealth plan.
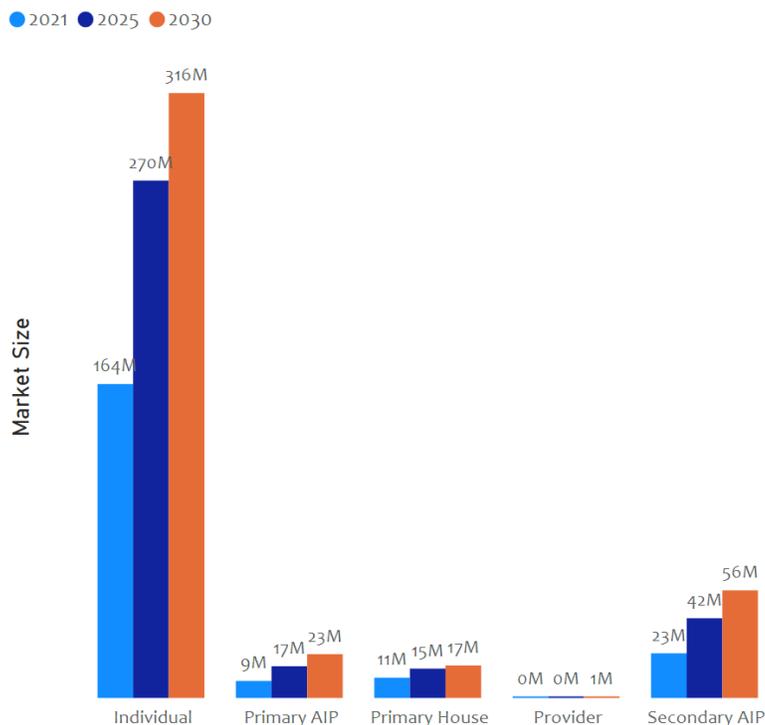


Figure 3 Projected Telehealth market size for different stakeholders

**Primary Aging In Place (AIP):** Elders (65+ years) and their caregivers (Secondary AIP) also have a large stake in the progress of Telehealth solutions. More and more elders are turning towards aging in their own homes or AIP. With AIP comes technologies such as Telehealth to make their stay at home safer and more convenient. As the elder population grows (2017 elder population 45M to 2060 elder population 95M) and 90% reporting wanting to age at home, Telehealth will become a prime service for AIP [7].

**Secondary AIP:** Caregivers are also a big part of an elder's care journey. The 2020 AARP Caregiver report noted that 53M Americans acted as a caregiver sometime in the past 12 months [7]. 89% of those people were relatives and spend on average 23.7 hours per week caring for their elder family members [7]. Since caregivers are providing significant care for elders, they need to be in the loop of the elder's health care journey, including Telehealth visits.

**Provider Adoption:** Physicians and other healthcare providers (categorized as provider

adoption) are also growing more accustomed to using Telehealth, with 80% of physicians who have **used Telehealth plan to continue using it after the** pandemic [8]. Since restrictions have eased and clearer reimbursement pathways for Telehealth have been established, more physicians will likely continue adding it to their practice. Physicians (from all types of specialties and locations) will be able to open their services to users of Telehealth. A survey done by Amwell found that 96% of physicians would be willing to use Telehealth for their practice and 93% said they would use it for chronic care management [9]. Telehealth is trending towards becoming an additional health tool for healthcare.

## Business Model

### Telecom Offerings for Telehealth

Before going into Telehealth offerings, we need to understand some of the issues our identified stakeholders have with the current healthcare system.

| | Healthcare Access | Unified Communication | Analytics | Monitoring | Trust/ Security |
|---|---|---|---|---|---|
| Individual | ✓ | ✓ | ✓ | ✓ | ✓ |
| Primary House | ✓ | ✓ | ✓ | ✓ | ✓ |
| Primary AIP | ✓ | ✓ | ✓ | ✓ | ✓ |
| Secondary AIP | | ✓ | ✓ | ✓ | ✓ |
| Provider Adoption | | ✓ | ✓ | ✓ | ✓ |

Table 1 Common problems in the Healthcare industry and which stakeholders face them

The table above describes some common problems the stakeholders above have faced with our health system. Derived from these problems, we have created offerings that MSOs can offer to address those problems: Basic Telehealth, Security, Analytics, and Install and Support (IandS).

**Basic Telehealth:** Basic Telehealth offerings would address the basics of a medical encounter between patient and provider. This offering would include simple audio or video communication between the different parties. Hence it would address the need of making sure services are provided to anyone if they have a reliable connection. Operators have a chance to utilize their strength in broadband, in-home connectivity, and unified communications to offer services to Telehealth stakeholders. By extending their current services they can add infrastructure to support Telehealth services and address the needs of the consumer.

**Security:** This offering is mainly dependent on the level of data security required in the service. If all the service operators want to offer is simply video or audio communication, it may not need to be HIPAA (Health Insurance Portability and Accountability Act) compliant. However, if the service is more integrated with the patient data (personal information or other patient data), then having HIPAA and PHI (Protected Health Information) compliance is necessary. Depending on the number of risks operators want to take on, building trust in the service is essential. Cable operators can provide secure connections and data transfer, making it easier to delve into the security offering. The challenge with providing healthcare security would be to maintain services that meet established regulations. Offering secure services may become table stakes at some point, but in the meantime, these services can be offered as an additional service.

**Analytics:** Analytical services would involve both analysis and visualization of different forms of patient or hospital data. It can help inform providers of lab trends, correlations that may help with diagnosis or chronic care management. Visualizations assist with understanding Telehealth trends in the hospital, whether it be for

**Legend:** ● 2021 ● 2025 ● 2030

Y-axis: Telecom Market Size

- Individual: 8M, 67M, 158M
- Primary AIP: 0M, 4M, 11M
- Primary House: 1M, 4M, 8M
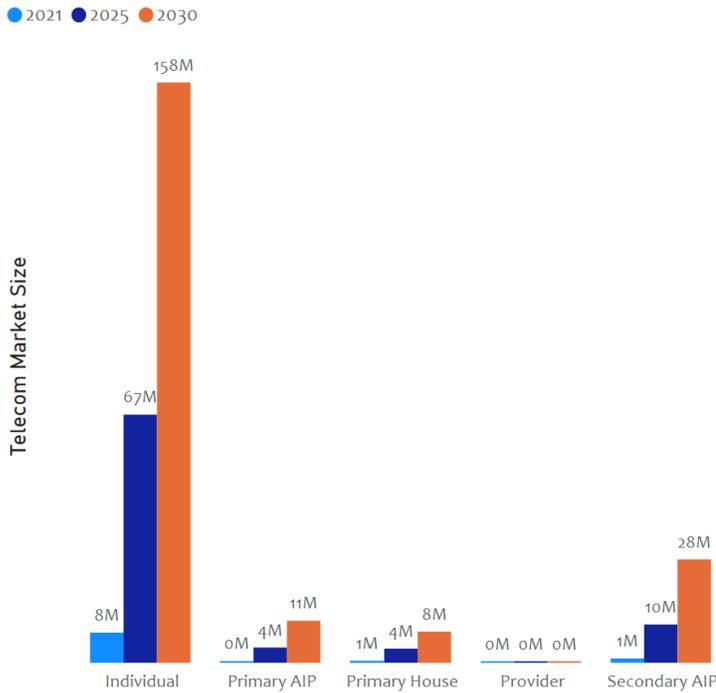- Provider: 0M, 0M, 0M
- Secondary AIP: 1M, 10M, 28M

Figure 4 Telecom operators projected market size by stakeholder

Telehealth management, device operations, etc. With a wide range of analytical services that can be derived from hospital data, operators have a chance to work with healthcare experts to provide metric-driven changes within the industry.

**Installation and Support (IandS):** IandS involves any form of install and support that Telehealth services may require with each stakeholder will require different levels of support. For providers, this may involve restructuring their infrastructure to support Telehealth. For example, repurposing their devices, installing software/hardware, new Telehealth devices, servicing devices, software, etc. For the patients, there may not be as many devices to install, but there is potential for servicing devices. Depending on the level of IandS, individuals will have to be specially trained to support the telehealth infrastructure. This service could be offered as an upsell package by the operators. Since operators have been integrated into Telehealth since the beginning, IandS is another chance to enhance their Telehealth portfolio.

In the following sections, we provide the Telecom operator market size for the above product offerings, the revenue opportunities and cost, and profitability analysis.

*Operators Market Size*

With a very conservative initial size and growth assumption per market segment (Individual, Primary House, Secondary AIP, Primary AIP, and Provider) and a detailed breakdown of these segments into subsegments for an accurate forecast, we derived the next 10-year Telecom operators Telehealth forecast.

When looking at how the Telehealth market is projected to grow, as shown in Figure 4, there is consistent growth in most segments. The market segment seeing the most growth is the individual. We can attribute this amount of growth to increased acceptance of Telehealth services. As Telehealth builds its reputation as a reliable mode of healthcare, more individuals will turn to it for primary care visits, specialized treatment, chronic care management, etc.

Additionally, with Primary AIP and Secondary AIP, growth can be linked back to the move towards elders wanting to age in their own homes. As an increasing number of elders shift to AIP, there is a need for elders to receive healthcare services in their own homes. Together with that, the elder's caregiver(s) will also increase because of a need for additional care.

*Potential Business Models*

While healthcare is a mature industry, Telehealth has just begun to receive heavy attention; however, due to the pandemic, many companies have made a push to enter the market. This means operators need to utilize their strengths to create strong differentiators and a portfolio based on customer needs. Figure 5 below highlights business model operators can refer to extend their capabilities within the realm of the four offerings.

*Basic Telehealth Offering:* Since the Basic Telehealth offering only deals with the essential video/audio communication MSOs will be working closely with healthcare providers. Other stakeholders (individual, Primary House, Primary AIP, and Secondary AIP) will often engage with a provider rather than MSO in the Basic offering. By nature of this pathway, MSOs will mostly be receiving revenue directly from healthcare providers.

*Security Offering:* Most Telehealth security efforts are incorporated into the Telehealth platform, and for that reason revenue generated from a security offering would primarily involve the healthcare provider. The other stakeholders would have security provided to them when they login to the platform, but MSOs would not be gaining any direct revenue from them.

*Analytics Offering:* Like the security offering, providers would be the main stakeholder for analytics offering. While patients/caregivers may have access to certain pieces of data, the provider would be actively be using/paying for the analytics. MSOs may take on a proactive approach to creating dashboards or analytical tools for providers to use in their practice. Hence, operators will receive revenue from the providers that use their analytical tools or services.
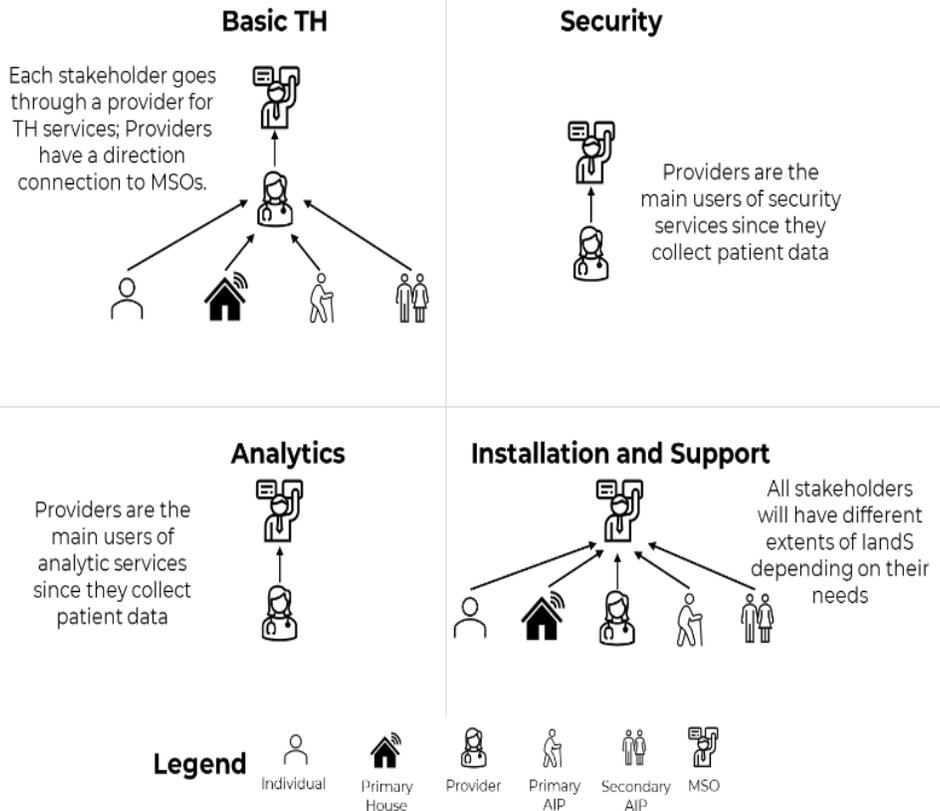


Figure 5 High level business model assumed in the revenue, cost, and profitability analysis

*IandS Offering:* Depending on the condition of the patient or the active role medicine plays in their daily lives, stakeholders may require more install and support of the medical device. We do, however, expect that majority of the revenue will be taken from the provider because of the variety of medical devices they already have. While other stakeholders may have closer to one-time cost or
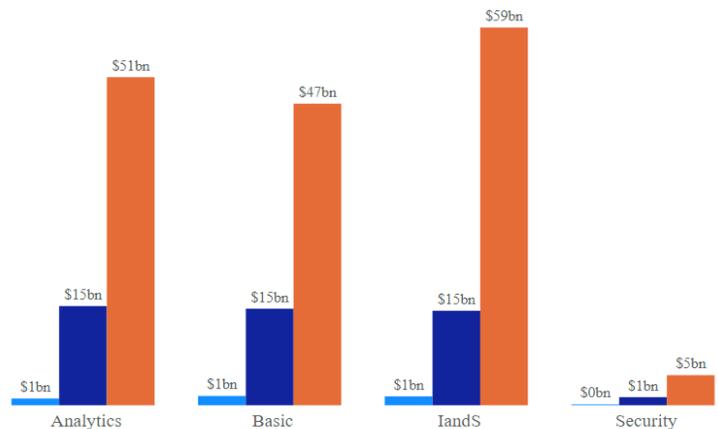


Figure 6 10-year revenue forecast by different offers

less frequent monthly IandS devices, providers need more active device support.

These pathways are just a few of the possible ways MSO can interact with certain Telehealth stakeholders. As operators grow their Telehealth presence, they can expand their business models and how they reach out to stakeholders.

## Telehealth Business Case Analysis

### Telehealth revenue forecast for operators

In this section, we provide an analysis of different Telehealth revenue opportunities for operators. We have performed extensive stakeholder business cases and analyzed business models used by different vendors to identify potential operator revenue opportunities. The summary of this analysis is presented by market segments in Figures 6 and 7.

*Basic Telehealth:* With the Basic Telehealth offering above, Telecom Operators can derive revenue from either Telehealth visits, monthly revenue from package deals, or users/license charges. For the individual Telehealth visit, the revenue would go from the provider to the Telecom operator. For their pricing model, operators can consider that patients are gaining significant savings (from fuel expenses, lost wages, and other family expenses). Telecom operators can make money in a few ways with Primary House such as taking revenue from the monthly and/or per visit charges. As a reference, we have seen two types of package deals: a) straight monthly charge and b) a reduced monthly charge with an additional per visit charge. With providers, revenue can be derived from monthly user charges, software license charges, etc. The stakeholder business case includes saving money on fuel spending, wages, and travel time. Per visit, patients can save roughly $280 [10]. In addition,

the operator can partner with providers to create an integrated platform where operators would take the majority of the revenue for running the back end. Monthly packages for homes (such as HealthTap or OurDoctor) are another revenue pathway for operators.

*Security:* Since security will mainly focus on the provider end, operators can charge through various pricing models such as licensing, number of users, etc. Security is also provided through EHR systems, thus there may be some revenue



Revenue opportunity by market segment
**Year** ● 2021 ● 2025 ● 2030

Figure 7 10-year revenue forecast for different market segments

split with EHR systems or other partners. License charges can vary depending on the level of protection provided. Some estimate it to be between $1,000-$2,000 per year. A per-user charge can also change depending on the size of the institution or the amount of data being handled.

*Analytics:* Pricing for analytics and visualizations can be dependent on, a) the number of hospitals claims or b) other metrics chosen by the operator. Because there is a wide range of types of visualizations and analytical services that can fall under this offer, we focused on conservative numbers to project the revenue. One such service was analyzing hospitals' claims.

*Install and Support:* IandS can become more complicated for certain stakeholders, but operators already have an infrastructure to handle this complexity! In the IandS models, operators can make revenue from installing technology for providers with monthly servicing costs; however, for an individual or primary house service, there may be little revenue from installations and servicing depending on the type of devices used. Provider installations can be upwards of $10,000/device with a fraction of that going to per month servicing.

*Revenue Projection Summary:* When comparing how different offering revenues are changing between stakeholders from 2025 to 2030, some clear trends emerge. In terms of revenue portion size, each stakeholder has relatively the same portion of the total revenue. The two largest segments in both 2025 and 2030 are the Individual and Primary AIP. With Individuals holding the largest market segment (~76% in 2025 and 2030) and most revenue generated through Basic Telehealth offerings, it is not a surprise that it is one of the larger revenue-generating stakeholders. As for Primary AIP, while its market is not larger than Secondary AIP, this group will directly be interacting with the offerings. For example, an elder will be the primary user for a Basic Telehealth solution while a caregiver may require pared-down functionality to monitor the elder. As MSOs continue to explore Telehealth, more revenue opportunities will emerge beyond just the stakeholders/offerings we have suggested.

### Telehealth solution cost projection

End-to-end Telehealth costs are grouped into 5 main categories: *new subscribers, service offering, operations and support, training,* and *overhead.* For the cost model, each of these costs is further categorized into:

- Initial one-time costs: These are the costs of building the initial Telehealth infrastructure. This typically scales based on aggregation points and the scaling of the modular architecture per volume of customers (such as per thousand, per million customers, etc.)

- Net new customer costs: These are the cost of adding a new customer to the platform. This typically depends on the type of service for which a customer is subscribing.

- Per subscriber costs: These are per subscriber maintenance costs.

- Installation and support costs: These costs include per customer installation and support costs.

- Overhead costs: These are for the additional management (i.e., Marketing, Sales, etc.) support overhead. These costs scale based on the number of markets and the number of resources supported per manager.

Each of the cost categories will be reviewed in more detail in the following sections.

## New subscriber costs

New subscriber costs are considered costs specific to adding a new customer. The demarcation point of the Telehealth service is being defined as the Telehealth hub (could be a logical or a physical device). For any of the five market segments identified there will be a hub cost. The hub cost is expected to be different for the different market segments. For individuals, primary home, and primary AIP needs the hub and other relevant basic devices cost is around $80. A Secondary AIP hub is ~$150 while a provider hub is ~$750. Subscribers are assumed to either pay for their premise equipment or rent it for the time that they have the service. For this reason, no net new subscriber cost is applied for the premise equipment in the business case model.

The cost to support unified communications at the premise is projected to be the same on a per-user basis. Each user would have a licensing cost and be required to download a communication application. The cost of the associated application and license is expected to decrease significantly over time. Initial costs are being estimated at $2 to $4 per month per subscriber, however, lower cost may be achievable assuming volume discounts.

Premise sensor costs will vary based on the offering, market segment, and the specific condition targeted to be addressed by the Telehealth solution. Some of the sensor packages for individuals with a basic package could be around $750, while a basic package for Primary AIP is ~$6,750. On top of this, a monitoring service charge of ~$1 - $5 per subscriber per month is also likely to be incurred. Like the premise equipment, the sensor packages would also be purchased or leased by the customer for at least the time that they have the service. For this reason, no cost is applied for the senor packages in the business case model. Equipment installation and maintenance costs are being covered under Operations and Support costs.
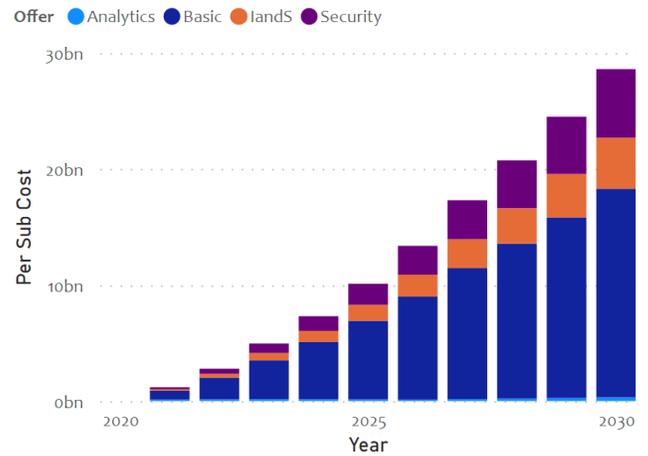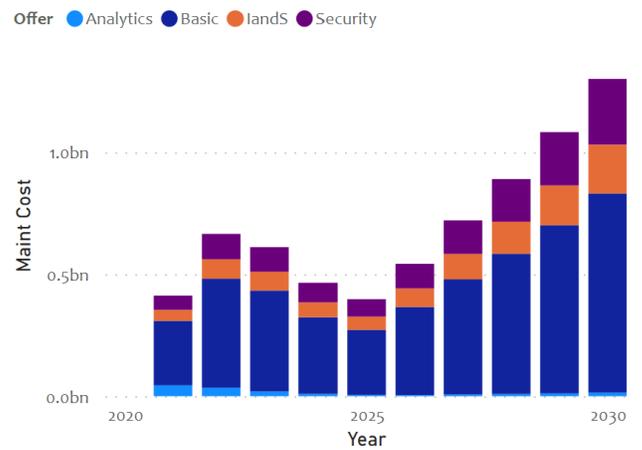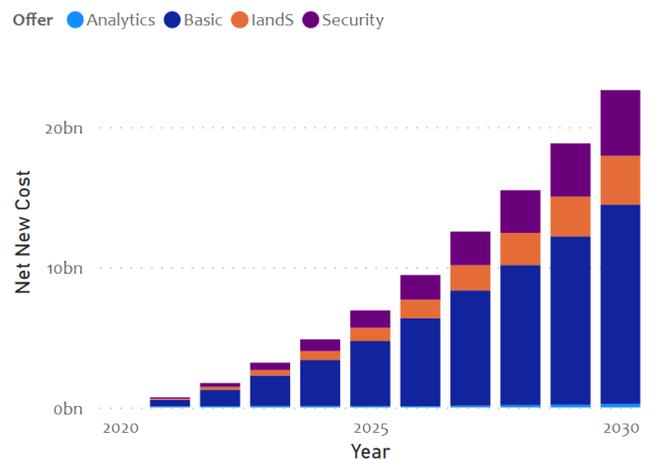


Figure 8 High level estimated cost breakdown

## Service offering costs

The most significant impact to operators in supporting the Telehealth market will be felt in

providing the targeted services. Most of the charges will be one-time costs with some ongoing support and maintenance costs. Initial costs will be high as they are investments in the initial infrastructure, but these costs will significantly come down over time. Time to market is very important to capture market share, so where justified, forming partnerships or outsourcing necessary service offering requirements is recommended. Below is a list of the primary service offering support requirements.

- Unified Communications for individual households

- Personal or Electronic Health Record (PHR or EMR) integration

- Platform compliance to Health Insurance Portability and Accountability Act (HIPAA)

- Security (not considered unique to the Telehealth offering) and privacy support

- Data hosting services and partitioning

- Analytical services

Note that these service offering costs are expected to decrease over time as systems and processes are put in place to address the offerings.

**Operations and support costs**

Operations and support costs are the costs to cover order fulfillment and customer service. These costs tend to have the biggest impact on the cost model. By operators leveraging their existing order fulfillment and customer support organizations, they have a significant competitive advantage in the early stage of this developing market. They will also be better equipped to be more accurate at estimating and controlling these costs. In the operating costs, we considered order fulfillment costs such as order entry and installation and customer services such as customer care and in-home service team costs.

Employee training will be critical to have a fast and smooth introduction of Telehealth service offerings. Training is considered a one-time cost.

However, additional training will need to be provided for onboarding new employees. Although the entire enterprise would need some form of training, primary training would be focused on five distinct areas of the organization.

- Sales

- Installation and Provisioning

- Customer Care

- Field Service and Support

- Enterprise

Enterprise Training will include understanding the product offerings, which is key for all areas of the organization. Each organization will need to understand how these new offerings impact their job functions and any associated process changes that are made.

**Overhead costs**

To cover the costs that are shared an additional overhead charge has been assumed. These costs account for personnel responsible for sales, marketing, and the dedicated engineering for Telehealth solution support. An estimated headcount has been applied to the model. These overhead costs will be incurred year over year to support the product offerings and would be scaled based on the number of subscribers.

**Summarized cost projections**

As stated earlier, each of these cost categories is further classified for the business case model. Figure 8 shows a high-level estimation of the costs per sub, net new subscribers addition, and support.

Per sub monthly costs are the highest due to revenue share agreements with the other solution component providers such as unified communications platform, PHR or EMR services, and specialized analytical services. Maintenance is the next major cost driver due to increased services. One can argue that the ROI of IandS may not be high enough to offer these services. But IandS, being the key differentiator for the

operators, drives higher revenues through gaining more customers for the other services. The incremental cost for adding newer customers will diminish after the initial solution creation.

### Profitability Analysis

A shown in Figure 9, the Telehealth opportunity for operators is going to reach 100s of billions of dollars in the US alone. We made a very conservative take rate assumption of 5% YOY growth in the market capture for operators. There is a significant upside to the profitability depending on the level of involvement an operator wants to have with the healthcare industry. We believe as both industries learn to trust each other, they will take more risks in solving complex Telehealth problems and hence open doors for higher rewards than projected here.

## Conclusions and recommendations

This paper outlines our research of the Telehealth market size and identified product offerings that are needed to fill the demand of a growing Telehealth market. The result of our analysis reveals a compelling opportunity for MSOs to play a key role in fulfilling this market need by growing their product offerings and enabling end-to-end Telehealth solutions.

As this paper points out, the healthcare industry is looking for innovations to help control exploding costs and address changing market needs. Operators are uniquely positioned to help address this Telehealth market need. The cable operators have a competitive advantage in several key areas:

- Established relationships with the target customer base

- Communication infrastructure ownership and control

- Data hosting and analytics capabilities

- Consolidated billing

- Service provisioning and management experience

- Customer service and support (boots on the ground) organizations in place

The key will be to use these competitive advantages to quickly capture market share and grow operating profits quickly while the market is still fragmented. This market discontinuity is the
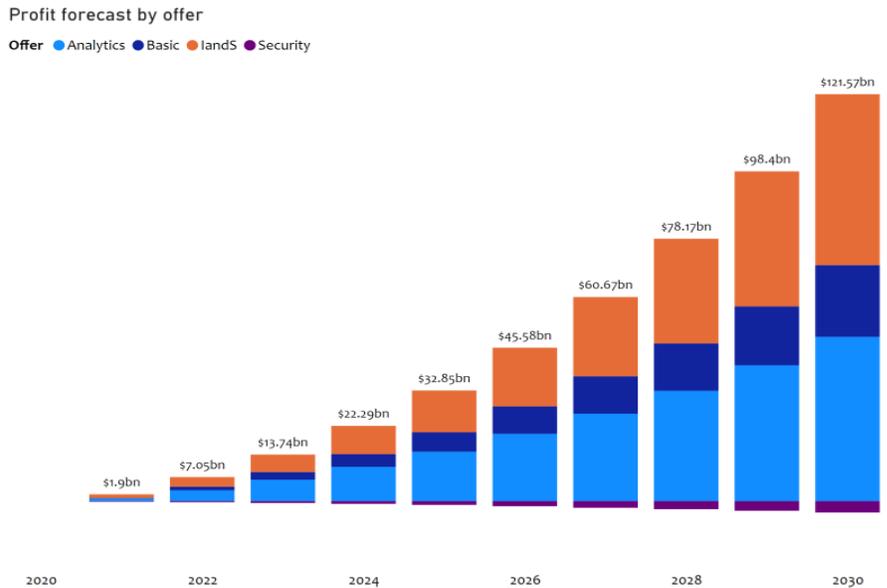


Figure 9 Telehealth 10-year profitability forecast by offer

optimum time to enter this expanding market.

To be most competitive, operators will also need to address their weaknesses. Healthcare is a new area for MSOs with some unique challenges. You not only need to support patients (i.e., subscribers), but also the assortment of healthcare providers and institutions. Health Insurance Portability and Accountability Act (HIPAA) regulations will also need to be addressed. From the market research and analysis, we estimated the **telecom market size**, the **projected revenue,** and the **estimated cost** to support making these Telehealth offerings available. By modeling this data, we were able to calculate the projected profit. This model can be used by MSO's and other operators in developing their Telehealth business cases.

Based on our extensive analysis, we provide the following observations and recommendations to cable operators:

- Telehealth gives way for cable operators to enter the lucrative inter-industry collaboration with the healthcare industry. The cable industry is uniquely positioned with its current capabilities (unified communication, broadband, and IoT devices).

- Develop partnerships with individuals, caregivers, and various healthcare providers to integrate different stakeholders.

- The development of integration partnerships and purchasing key technologies will be crucial to bringing these offerings to the market quickly. The product offering strategy should focus on providing end-to-end Telehealth solutions.

- Repurpose infrastructure to support Telehealth offerings and HIPAA considerations.

- The offers presented here do not take into consideration the level of risk an operator is willing to take. We highly recommended exploring these during their internal strategic discussion.

Telehealth is not only a huge opportunity for operators to seize in the United States, but it is becoming a new addition to the ever-changing healthcare field around the world.

For any additional information reach out to Sudheer Dharanikota at sudheer@duketechsolutions.com. Refer to the Duke Tech Solutions website to access an interactive model presented here.

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