IoT Support: Solutions for the Internet of Tomorrow

A Parks Associates Whitepaper Developed for

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The Internet of Things (IoT) has introduced new categories of connected devices to broadband households and has led to an increase in the number of connected devices being used by consumers globally. Ericsson forecasts the world will have 28 billion connected devices by 2021. While the increasing use of connected devices is generating valuable data that helps CE manufacturers uncover new revenue and service opportunities, it has also led to increasing technical complexity throughout consumer homes and new support challenges for brands. The use of advanced support technologies and tools can help providers anticipate and minimize the challenges of modern connected lifestyles in order to create superior product experiences and promote growth across IoT industries.

IoT: Making Progress in Broadband Households

The term **"Internet of Things"** has different interpretations across industry players, ranging from smart home-related products to a universe of all connected devices.

> Parks Associates defines IoT as "the range of networked products that are connected to the Internet and may have an accompanying virtual object in the software."

IoT devices cross multiple categories and include the following :

- **Connected computing devices** such as desktops, laptops, tablets, smartphones, and smart watches.
- **Connected entertainment devices** such as smart TVs, game consoles, streaming media players, and Blu-ray players.
- **Connected healthcare devices** such as fitness trackers, exercise equipment, digital pill boxes, and heart rate monitors.
- **Smart home devices** such as networked cameras, connected door locks, lighting controls, and connected thermostats.

The Internet of Things

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Connected computing and entertainment devices are now prolific in broadband households—U.S. broadband households have an average of 8.1 connected computing and entertainment devices.

With the exception of smart TVs and smart watches, the markets for these devices are approaching saturation, and market penetration rates for most computing and entertainment devices have remained largely the same since early 2015.

As the penetration of some connected devices stagnates due to factors like market saturation or cannibalization of device functionality, new connected products are constantly emerging.

Newer categories of connected devices, such as connected healthcare and smart home, are in the early adopter phase of market penetration. For **connected healthcare devices**, 33% of U.S. broadband households now own at least one, with connected fitness trackers leading this category. **Smart home device** adoption has also experienced some traction over the past few years—19% of broadband households now own a smart home device.

Other emerging connected products include **connected appliances** and **connected cars**. While these devices have been on the market for some time, growth in adoption has been negligible as the manufacturers of these products are still trying to increase consumer familiarity and identify the value proposition that will have the greatest appeal among consumers.

Several **robot use cases** are also in development for consumer markets, but so far, robotic vacuum cleaners have been the most successful robotic product in the U.S. market.

Virtual reality headsets are also likely to improve adoption rates in the entertainment category. Current adoption of virtual reality headsets is 2% of U.S. broadband households, but 8% of millennials plan to buy a virtual reality headset by end of 2016.

33% of U.S. broadband households ***now own at least one*** **connected healthcare device**

19% of U.S. broadband households ***now own a*** **smart home device**

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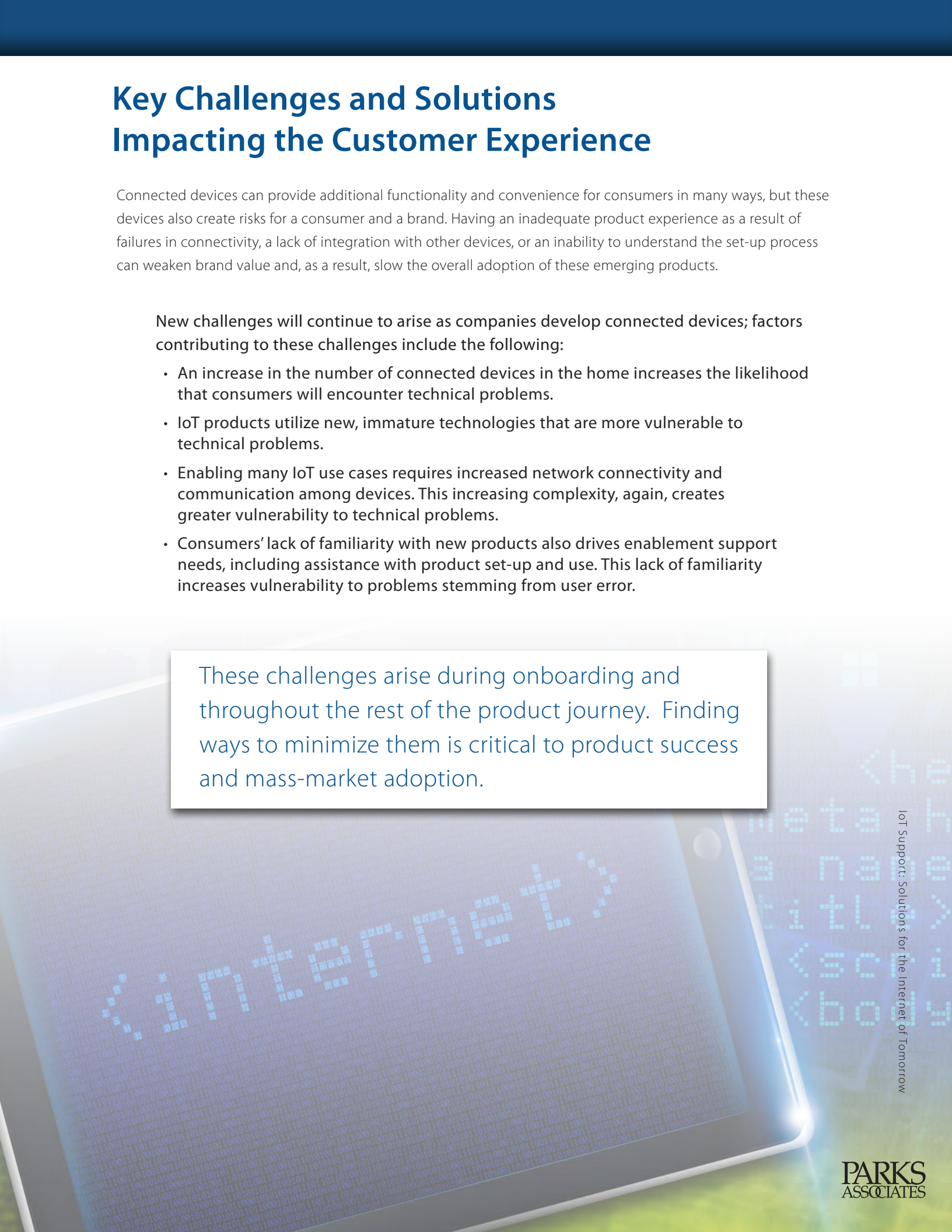
Key Challenges and Solutions Impacting the Customer Experience

Connected devices can provide additional functionality and convenience for consumers in many ways, but these devices also create risks for a consumer and a brand. Having an inadequate product experience as a result of failures in connectivity, a lack of integration with other devices, or an inability to understand the set-up process can weaken brand value and, as a result, slow the overall adoption of these emerging products.

New challenges will continue to arise as companies develop connected devices; factors contributing to these challenges include the following:

- An increase in the number of connected devices in the home increases the likelihood that consumers will encounter technical problems.
- IoT products utilize new, immature technologies that are more vulnerable to technical problems.
- Enabling many IoT use cases requires increased network connectivity and communication among devices. This increasing complexity, again, creates greater vulnerability to technical problems.
- Consumers' lack of familiarity with new products also drives enablement support needs, including assistance with product set-up and use. This lack of familiarity increases vulnerability to problems stemming from user error.

These challenges arise during onboarding and throughout the rest of the product journey. Finding ways to minimize them is critical to product success and mass-market adoption.



Challenges with Onboarding

Traditional computing and entertainment devices have efficient and effective set-up wizards that guide consumers through the device's set-up process. As a result, the vast majority of computing and entertainment device owners set up these devices themselves, and most do not encounter problems during this process.

> Nearly one-fifth of smart home device owners report that the process of setting up their smart home device is somewhat inconvenient.

Problems associated with setting up smart home devices

- Inefficient setup due to a lack of consumer familiarity with the set-up process
- Difficulty connecting the device to the home network
- Incomplete setup due to unmet set-up requirements, such as additional materials

Brands developing new connected products and services yearn to accelerate market adoption, so it is critical for them to pay close attention to the experience of their customers during product and service onboarding.

Parks Associates research shows that problems during the set-up process have a distinct negative impact on the likelihood of making repeat purchases from a brand.

U.S. consumers experiencing no set-up problems with their smart home devices —

approximately **50%**

report that they would purchase a similar product from the brand.

Only about **33%**

of those who encountered set-up problems would purchase a similar product from the brand again.

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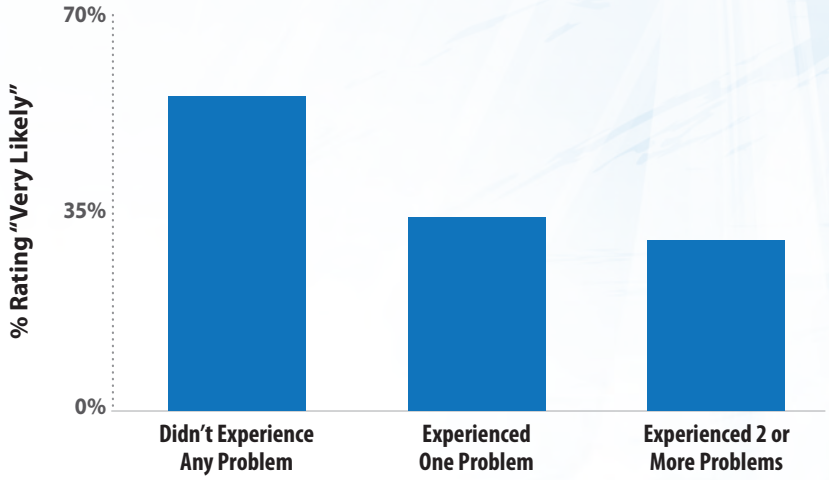
Likelihood of Purchasing a Smart Home Device of the Same Brand by Numbers of Set-up Problems

U.S. Broadband Households



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Providing further incentive for protecting customers' set-up experiences is the fact that achieving repeat purchases is critical for growth in smart home industries. Purchase intentions for smart home devices are distinctly higher among owners of other smart home devices compared to non-owners.

> 70% of smart home device owners report intention to purchase a smart home device in the next 12 months, compared to 44% of non-owners of smart home devices.

Managing the Set-up Experience

Consumer set-up experiences for smart home devices have not changed significantly over the past year, despite the acknowledgement that superior set-up experiences are critical to the overall product experience. It will take some time for providers and industry consortia to work through the factors that lead to consumer challenges with new connected devices. However, new support strategies can be implemented to minimize negative effects and create more positive experiences.

Automate the set-up process

Providers need strategies that automate device setup to the greatest possible extent. Automated set-up wizards reduce the mental effort needed by consumers to determine and implement the steps involved in the set-up process. Lower levels of customer effort are associated with higher levels of customer satisfaction.

Since connectivity to the home network and other devices is increasingly important, technologies that enable automated device discovery and automatic configuration of devices will minimize the effort required to get devices connected and communicating with each other. Automated device set-up strategies reduce the level of effort that consumers exert and minimize the likelihood of technical problems stemming from human error. Challenges related to human error are notoriously difficult to replicate and resolve, often placing higher burdens on support resources.

Manage customer expectations

Even with automated setup, instructional self-help videos can further enhance the set-up experience. Support videos vary in length and depth of coverage of the overall process. Some are as short as 30 seconds and may just be a high-level overview of the process. Video overviews of the set-up process help to further manage customer expectations around the set-up process.

Managing customer expectations has a far-reaching impact on experience, as the perception of an experience is directly tied to one's expectations before undertaking the activity. A high-level overview of the support process can also mitigate delays in product setup by outlining the resources required for the process.

Leveraging tools and technologies in the support process improves the set-up experience by increasing the efficiency and accuracy of the process and minimizing set-up failure. These factors ultimately help to minimize product returns and improve overall product experiences.

Challenges to the Product Experience

Smart home products comprise a growing variety of capabilities and leverage a wide array of networking technologies and home control platforms in order to function, creating many opportunities for problems to occur when using devices.

> The lack of established technology standards in IoT industries increases this complexity and the likelihood of experiencing problems.

Common challenges associated with the ongoing use of new connected devices include the following:

- Technical problems with devices, such as functional glitches and complete device failure
- Interoperability issues that prevent seamless communication of commands between devices
- Connectivity issues, where devices lose connection to the home network router
- Difficulty learning how to use device features or achieve desired use cases

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Managing the Product Experience

Proactively Support Customers

IoT devices must connect to the home network, either directly or through a hub, and from there, they can be accessed by other devices. The end user may then activate use cases or program shortcuts that involve communication among these devices.

> For example, a homeowner may program entertainment devices to turn off when he or she turns off the lights after 10 p.m. Given the multitude of automated steps that go into turning off entertainment devices, if the devices do not shut off when the homeowner activates the command, multiple observations will have to be made in order to decipher the source of the problem. Identifying and then resolving these problems takes a lot of time and inevitably puts a strain on the support resources of any brand that operates in the industry.

Along with increasing the number and complexity of problems, the use cases for newer connected devices also increase the urgency with which technical problems must be addressed.

> The most desired IoT use cases for the smart home involve home safety and security.

When depending on devices for such sensitive use cases, there is simply no room for any failures that interrupt the service consumers get from these connected devices. The same goes for connected healthcare devices. Consumers rely on these devices to monitor vital statistics and to deliver necessary medication. A failure in these devices could be potentially life-threatening.

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Utilize Data Analytics

Proactive and efficient support strategies are ideal for IoT devices. Fortunately, connected devices generate a broad range of data that can help providers develop these strategies.

> Generated data may include device status, current settings, battery usage and historical information on operating times, power-up cycles, battery cycling, and setting history.

Capturing and analyzing this data can provide actionable insights that allow brands to anticipate support needs and apply the most efficient and effective problem resolution strategies.

Creating Consumer Confidence with Data Analytics

Device-generated data, especially when analyzed within the context of a consumer's technical environment or ecosystem, can yield insights that can help to prevent glitches that threaten connected home experiences.

For instance, even after the initial connection of a smart home device to the home network, customers often experience unexpected disconnections. Since connectivity to the home network is central to enabling most smart home use cases, disconnections can have unfavorable consequences. These consequences may include preventing a smart smoke detector or smart carbon monoxide detector from sending the necessary alerts.

Data gathered over time can provide insight into when a problem is likely to happen, creating the opportunity for support providers and brands to proactively connect with customers (perhaps when Wi-Fi signal strength becomes low or disconnected) and address the problem before it becomes detrimental.

Similar analytics can be applied to connected devices to assess the likelihood of device or device communication failure and proactively support customers to ensure that they receive the promise of their devices.

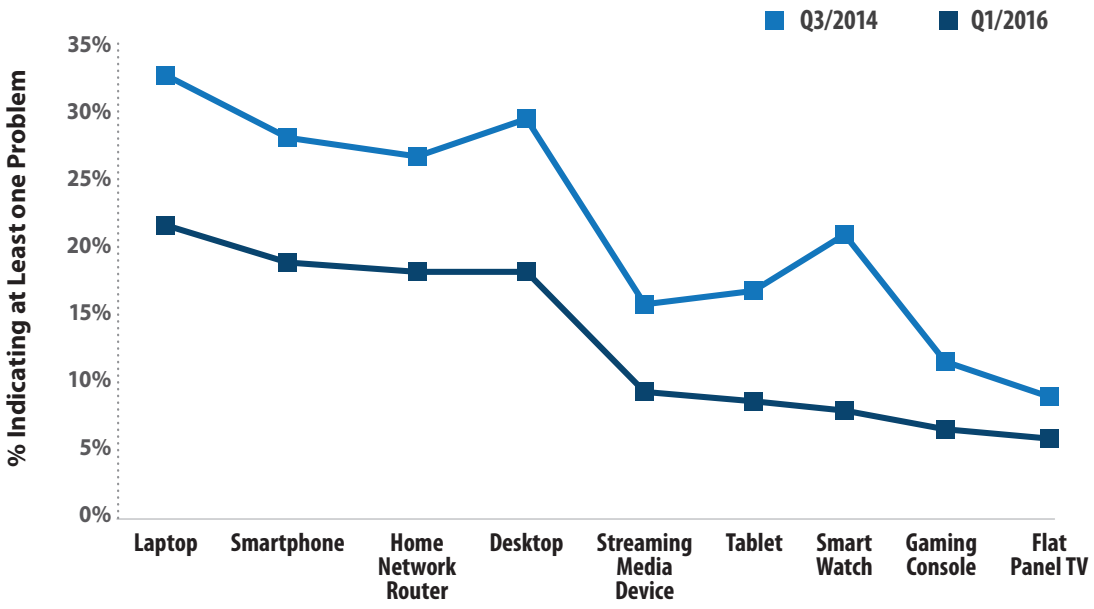
This kind of product experience will help drive consumer confidence in the brand and inspire repeat purchases.

Brands and other support providers have had some success using analytics to improve customer experiences with computers, smartphones, and home network routers. Many brands use large repositories of data to perform PC health checks and proactively highlight issues with consumers' devices. Through insights from data collected over time, client-based applications are also being used to regularly monitor PC issues and resolve them before they ever come to the attention of the consumer. Incidentally, there has been a significant reduction in PC-related issues. Even within the last two years, the percentage of consumers experiencing problems with PCs has declined significantly.

In 2014, 33% of laptop owners experienced problems with their device, compared with only 21% in 2016.

Problems Experienced with Devices

U.S. Broadband Households That Own Specified Devices/Services



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Benefiting from analytics, support automation has also been applied to problem diagnosis and resolution with home network routers.

The percentage of consumers who report experiencing problems with home network routers has declined by 10 percentage points over the past two years, falling from 28% in 2014 to only 18% in 2016.

Given the low penetration rates of new connected devices, such as smart home and connected healthcare devices, it may take some time to generate the magnitude of analytics that can be used to predict the issues that may arise while implementing the various use cases associated with new connected devices. This challenge is exacerbated by the fact that increasing connectivity throughout the home creates many divergent use cases for connected devices, and these nuances may decrease the speed at which patterns that allow support providers to predict future challenges can be identified.

With this in mind, it is imperative for brands developing IoT products that their products generate support-related data. These data will help identify patterns that can enhance automation of the support process.

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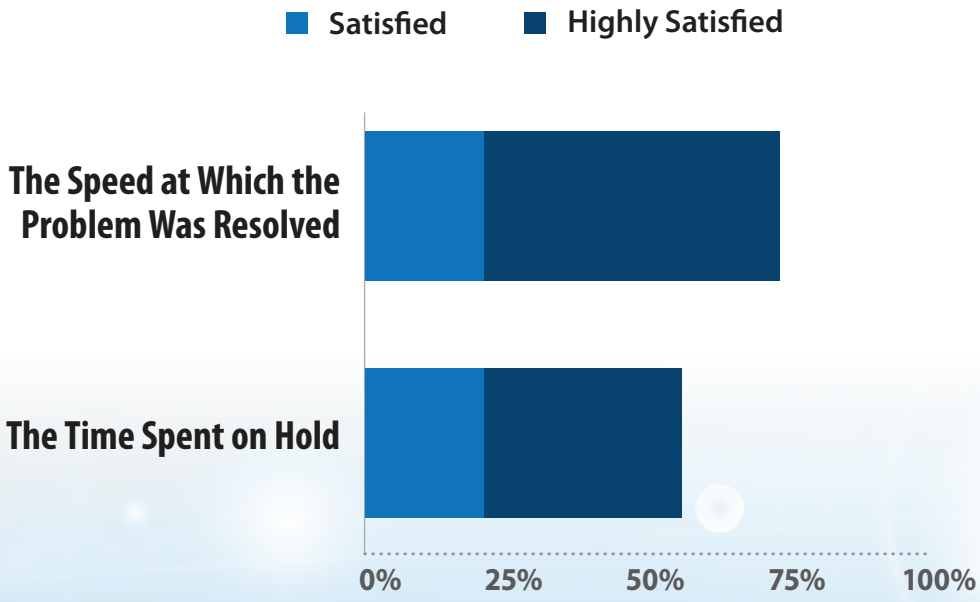
Provide Efficient Reactive Support

Until we are able to automate the identification and resolution of technical issues within the home, efficiency of reactive support is critical. The sense of support urgency generated by IoT use cases is compounded by consumers' expectation of efficient support. Consumers expect brands to have the tools and information needed to resolve their problems in an efficient manner.

68% of consumers are satisfied with the time required to resolve technical problems, and 53% are satisfied with the time spent on hold while waiting to have their problems resolved.

Satisfaction with Specified Aspects of the Support Experience

U.S. Broadband Households that Resolved a Technical Problem with Professional Help



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Applying specific support strategies and tools can drive support efficiency and improve customer satisfaction with the support process. These tools and strategies include the following:

Visibility Tools

Software or solutions that give support agents visibility into the technical environment of broadband households increase the efficiency of the support process because support agents are not dependent on customers to make the observations necessary for diagnosis. The support experience is also significantly better for the consumer, whose participation in the support process is minimized.

Omnichannel Support

Although the telephone remains the leading channel used to contact support providers and the preferred channel to receive support, more than one-fifth of consumers report a preference to receive support through channels such as face-to-face in a retail store, onsite visits, online chat, and through technicians remotely logging into their devices. A growing number of consumers also prefer to resolve problems themselves with the assistance of self-help support tools.

> Providing superior support will mean making a wide variety of support channels available to consumers and enabling a seamless transfer among channels.

Knowledge Management Strategies

In the era of IoT, a customer's experience with a brand's product is no longer influenced only by that product but by the entire ecosystem of products in which that brand's product operates. Providing efficient and effective support to consumers requires an understanding of other products in the environment and how they interact with your product. Knowledge management strategies that facilitate the availability and easy accessibility of a broad range of support-related information create superior support experiences.

For any given brand, it may take some time to build this strategic knowledge base, and it might be helpful to leverage the resources of support and solutions providers that have more experience and expertise in supporting a broader ecosystem of products.

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Going Forward...

As brands seek to drive adoption of IoT products and services, they must provide superior product and support experiences that are efficient and minimize customer effort throughout the process. Companies are increasingly investing in next-generation technologies to deliver advanced support to the connected home. For example, service providers are using artificial intelligence in the form of **virtual support agents** to add a more personal touch to automated self-help tools.

Some providers are also evaluating the benefits of applying **augmented reality technology** to reduce customer effort when using self-help tools. Early efforts of augmented reality in support involve using the technology to overlay set-up instructions on the product or products that require support.

As IoT industries develop support strategies for the future, intelligent support systems will play an important role in enabling better service delivery and superior customer experience.

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Patrice Samuels studies digital home technical support services across global markets, with a focus on market trends, business models, and provider strategies. In addition to exploring events and disruptions in the technical support space, she examines pay-TV and broadband services in North America and Europe and digital media.

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