

Wi-Fi 6E and the Smart Media Device

The Key Technology Building Blocks of Change in the Future Home

By Charles Cheevers, CTO of Home Network Solutions, CommScope

The Smart Media Device and new wireless developments come under the spotlight.



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Charles Cheevers is CTO of Home Network Solutions, CommScope. As former Chief Technologist of CPE, he was responsible for the two- to five-year technology vision of CommScope's CPE business. In this role, he defined new home architectures for CPE devices and cloud-to-ground solutions as well as the evolution of CommScope's home gateways, set-tops and connected home solutions.

Over more than 20 years in the telecommunications industry, Mr. Cheevers has been responsible for bringing to market a range of technologies — including DVB, DOCSIS, DSL, PON Network and CPE Video Voice and Broadband solutions. Over the last six years, Mr. Cheevers has focused on delivering the next generation of connectivity and technology-driven user experiences to the home. As a result, he's played a key role in pioneering major trends in Wi-Fi®, IoT, IP video, TV experience and set-top technology and, most recently, AI-driven smart solutions, with the debut of CommScope's Smart Media Device.

Mr. Cheevers and his team have also been creating new home platforms for many of the world's leading service providers. With the emergence of new Wireless convergence solutions in both unlicensed and licensed bands — from 1 to 100GHz — Mr. Cheevers and the CommScope CTO office have been innovating new architectures for consumer and home wireless convergence across Wi-Fi, LTE and 5G.

Mr. Cheevers joined CommScope through its acquisition of ARRIS, where he served as Chief Technology Officer of CPE Solutions from 2012 to 2019. He joined ARRIS in 2003. Before his tenure at ARRIS, Mr. Cheevers was VP of Engineering and an Officer of Com21 Inc. and held senior management positions for Apple Inc.

Mr. Cheevers has served on the board of the Open Connectivity Foundation, one of the leading IoT standards initiatives, served on the SCTE organising committee for 2018 and 2019 and is a recipient of the 2006 and 2011 Cable and Satellite Euro50 award for his contributions to cable technology.

The Consumer Home is under constant change with the ever-increasing number of new connected devices and services. There is constant challenge to ensure a reliable platform for connectivity of these devices at the latencies and speeds which consumers expect. On top of this, consumers demand simplicity in their engagement with technology-driven services and the current fragmentation of smart home ecosystems and devices, as well as the myriad of Smart AI assistants, is confusing for the user and is frustrating as there is not a singular experience across their home (each room often offers different performance levels with their favourite services).

Because of this, CommScope is focused on a number of key technology innovation areas for the home in 2020 and 2021. The following two areas are the most significant in the short term.

- Introduction of the **Smart Media Device** — a device for each room of a home which ensures a common, converged singular consistent experience for all the services that the consumer wants to enjoy in their digital life.



Smart Media Device (SMD) platform 7852

- **Wi-Fi 6 and the follow-up addition of Wi-Fi 6E** as the future backbone of all wireless connected services in the home. Wi-Fi 6 brings huge new potential to Wi-Fi in the home – but the introduction of new 6GHz spectrum with Wi-Fi 6E unlocks this potential to be achievable in late 2020 and 2021 onwards.

The Smart Media Device – the new virtual ‘in-room’ extra member of the family

The Smart Media Device (SMD) is defined as the ‘hub of the room’. It provides all the necessary sensory inputs and outputs to allow consumers to bring Internet Services to the room and home. Leveraging the demarcation point of a traditional STB and the largest screens in a room, the SMD provides the perfect location to enable the consumer to be able to drive entertainment, Smart Home, Virtual Assistants and future Utility and Education and Security services, all with the comfort and ease provided by Voice-driven AI assistants.

The SMD combines functionality of the most important devices in the connected home to drive new levels of consumer engagement and revenue. The SMD is a set-top, smart speaker, visual smart assistant, IoT hub, video & teleconference and remote control—all in one. This new in room device works with the screen palette of the large screen TV to create a Home command and control centre function. This large screen

Command Centre creates a more hands-free, personalised, connected and convenient way to enjoy all the media, services, and applications in the digital home.

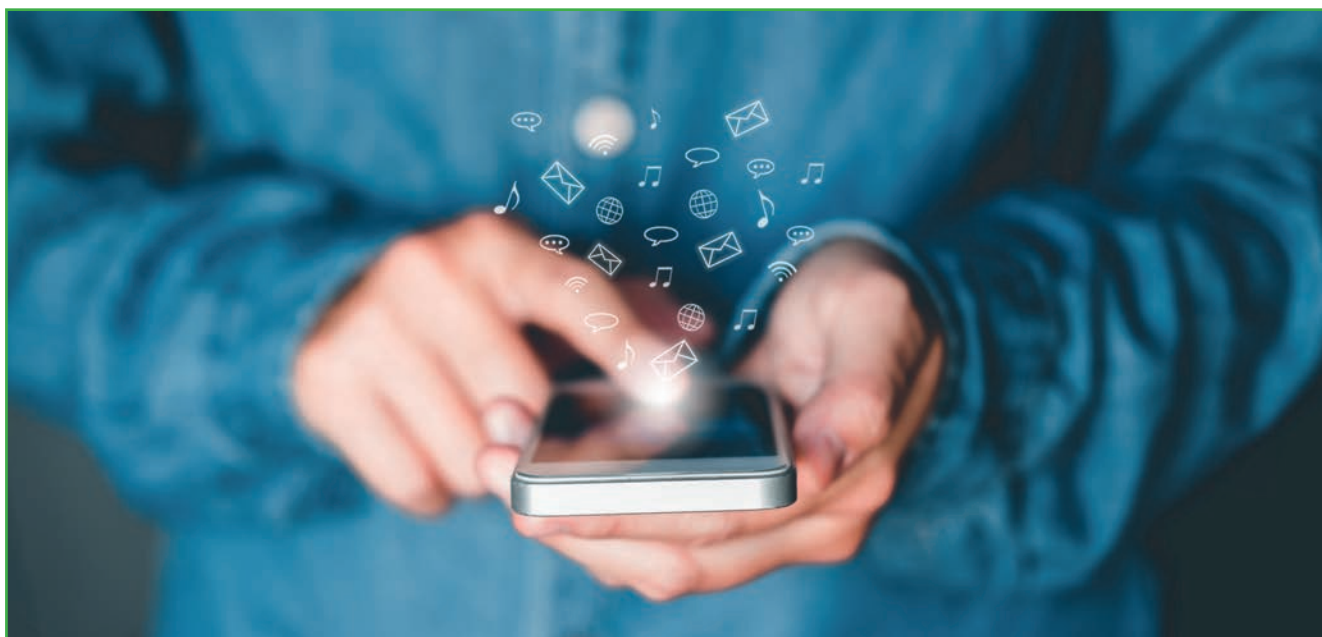
Imagine seeing your 8-year-old using natural voice in front of the SMD/TV experience to drive a rich educational experience with task and rewards offered through a technology experience (with which they are familiar). Imagine asking your SMD virtual assistant ‘How long is John on his smart phone today?’ in the middle of a discussion with your 13 year-old and getting a precise answer, with the specific times spent on each site and application. Imagine being an elderly ageing person sitting in your chair, in front of the SMD experience, and using the SMD experience to still control your life and access all the help and services that you need. These new experiences, and many more to be developed, all come flooding into the SMD platform with software-written skills that can be triggered by voice and other sensory inputs and responded to on the TV screen, smart-phone and other smart device systems in the home.

For service providers, it's the perfect opportunity to build upon the connectivity and entertainment experience in the home to provide the platform to attract new revenue-generating services to the consumer. The smart set-top market is expected to reach US\$ 2bn (1.77bn euros) by 2024 and the market will grow at a CAGR of 8% during 2018-24, according to market research firm Arizton. By combining the experiences that consumers already love—and are willing to pay for—with a smart and sophisticated device, service providers can carve out a new market for unique services which increase ARPU and improve stickiness.

To provide an example, CommScope is collaborating with Altice France to bring a personalised connected home experience to its SFR subscribers. Altice’s SFR Box 8 Smart Media Device represents the next phase of customer experience engagement. CommScope and Altice France jointly engaged on the design of the platform, which is the latest offering from CommScope’s category of Smart Media Device products.

The Altice Smart Media Device provides multiple functionalities to offer a connected home experience to subscribers. Far-field voice command technology, compatible with both Amazon

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Alexa® and SFR's voice control application, delivers smart assistant services via the subscriber's television screen. A software solution developed by Wiztivi, a leading company for multiscreen user interfaces (UI), means that users can control and interact with the television through voice commands – with no need for a physical television remote control.

We believe it is an area of incredible potential for operators looking to develop new, stickier sensory and immersive home services and to leverage the current demarcation and location of the STB with the large-screen TV. From a feature perspective, the SMD provides the following:

- 4K HDR video entertainment.
- Range of audio experiences from lower end voice quality to full surround sound experiences and soundbar capabilities.
- New Wi-Fi 6 capabilities to ensure best possible hassle-free connection to in home Wi-Fi networks.
- BLE for remote control unit, push to talk voice, Audio Streaming and also IoT hub for applications built on Bluetooth including Health. BLE services also include sensory ability for motion and presence detection.
- Integrated Voice and Visual Assistants from solution providers such as Amazon Alexa, Google Assistant,

Microsoft Cortana and others. Also, the addition of multiple wake words to include support for service providers' own unique and customised voice and visual services.

- Hands-free voice calling and (with a camera) the option to offer a fully integrated video conference ability to check in with elders or family members.

Residential Broadband Gateways and Wi-Fi 6 to Wi-Fi 6E

- Wi-Fi 6 will achieve greater adoption for its improved performance and range, even in mixed Wi-Fi 5 environments, with about 25% improvement for most people's Wi-Fi experience.
 - Increasing range will be a key driver in shipping more Wi-Fi extenders, especially with Wi-Fi 6.
- Home architectures will prepare for the inclusion of 6GHz spectrum, with Wi-Fi 6E emerging as deployed devices in the first half of 2021. This will be transformational for the home, the MDU and the Enterprise. With Wi-Fi 6E **only** allowing Wi-Fi 6 devices to operate in these new channels, the immediate 4x boost of Wi-Fi 6 efficiencies will be gained by services using this technology. Wi-Fi 6E will allow, for the first time, scheduled deterministic wireless delivery of

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packets – heralding a new set of highly available services to work without being tethered to Ethernet cables. Expect VR HMDs and cloud and wired gaming services to be the first to adopt Wi-Fi 6E as their preferred connection media.

- Service providers will lead on the use of new Wi-Fi 6E spectrum by owning bookend applications like multi-AP, 4K video to STB and low-latency gaming support.
- The home will have a truly multi-gigabit wireless backbone that will allow in-room wireless connections at much higher speeds and lower capacity than before.
- MDU congestion will be a thing of the past with the ability to offer a dedicated channel of capacity to each MDU apartment versus today's world where 5GHz spectrum is already congested.

- Even in SMB and Enterprise applications, the use of different Wi-Fi 6E channels for different departments, different services and different security applications will start to emerge in 2021.

Today, with the rollout of Wi-Fi 6, we are already seeing new use cases for Wi-Fi access points with the ability to detect motion and provide Wi-Fi based radar and imaging applications with finer movement granularity. This ranges from replacing basic passive infrared sensor functionality to other health and motion monitoring applications.

