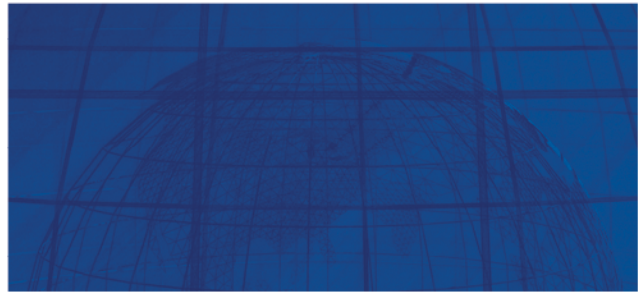More
Services

T-MOBILE US: A WI-FI CALLING SUCCESS STORY

USER EXPERIENCE

Service Transparency – The Wi-Fi Calling user experience is easy, completely transparent and, by default, activated on all T-Mobile US 4G smartphones – the service can be optionally turned on/off in the device settings menu. When a user connects to a Wi-Fi network, their device will automatically register with the T-Mobile US IMS network and will use voice and SMS/MMS messaging services over IMS. This is transparent to the user.

The user experience with IMS is 100% the same as the user experience using the legacy circuit-switched (CS) core network. Services are accessed through the phone's native dialer and address book, as well as its native messaging apps and inbox.

Service transparency for the T-Mobile US Wi-Fi Calling service was a top requirement, with the goal of ensuring that the company's network services be consistent and independent from the access network. In short, the goal was to make it impossible for subscribers – whether seeking faster data speeds or to manage their data consumption on the cellular network – to tell if their network services were coming from IMS versus the legacy CS network.

Voice Quality – The T-Mobile US Wi-Fi Calling service optionally uses HD Voice codecs to provide a premium high-fidelity user experience, provided the call recipient's device supports HD Voice codecs. T-Mobile US launched HD Voice service in 2013 and, as of September 2014, has over 100 HD Voice enabled smartphones in their network.

The T-Mobile US Wi-Fi Calling service is comparable to OTT voice services provided by Skype, Viber, and others, as long as the Wi-Fi access network is not congested and the signal strength and voice quality are good. If the Wi-Fi network is congested or the signal strength is poor, users have the option to disconnect from Wi-Fi and use the cellular network instead.

Seamless Mobility – The T-Mobile US launch of Voice over LTE (VoLTE) service using a converged IMS voice solution has enhanced the company's Wi-Fi Calling service, providing a seamless mobility that allows users' calls to remain active as they roam between Wi-Fi and LTE networks. The integration of the evolved Packet Data Gateway (ePDG) as a connection point to the Evolved Packet Core (EPC) network is what makes this convenience possible for the latest generation of VoLTE-enabled smartphones, such as the iPhone 6.

Wi-Fi Calling–enabled smartphones that do not support VoLTE cannot support seamless mobility. As a result, users who roam beyond Wi-Fi coverage while on an active call are notified with an audible beep that the signal strength is decreasing and the call will soon be dropped. This provides the user with ample time to return to stronger Wi-Fi network coverage and avoid dropping the call, or to gracefully end the call and access the cellular network.

International Roaming – The T-Mobile US Wi-Fi Calling service can be accessed over the public internet from anywhere in the world, effectively eliminating excessive international roaming fees when using voice and messaging services with others in the U.S. Because the user is connected to the T-Mobile US network in the U.S., all voice and messaging usage is considered 'local' and is counted against the user's rate plan.

Consumers have become accustomed to using OTT service providers, such as Skype, Viber, and others, to avoid international roaming fees. By making its Wi-Fi Calling service available from anywhere in the world, T-Mobile US has become a global provider of mobile communication services and an attractive alternative to OTT.

SOLUTION DESCRIPTION

The Mavenir System VoWi-Fi solution is a complete end-to-end IMS-based software solution that includes IMS core and application servers, all of which are based on a common software platform called the mOne® Convergence Platform. The key benefits of the Mavenir mOne Convergence Platform include:

- A common platform designed for reliability and scalability
- A hardware-agnostic software platform that is optionally virtualized and deployed on cloud-based infrastructure
- Modular architecture with key integrated components, such as load-balancer and configuration management
- Flexible deployment models to optionally scale up to expand capacity, or scale complex solutions down to a minimal footprint for entry-level deployments
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The scope of the Mavenir solution provided to T-Mobile US for Wi-Fi Calling includes the Session Border Controller (SBC/P-CSCF), IMS core/Interrogating Call Session Control Function (I-CSCF), Border Gateway Control Function (BGCF), Telephony Application Server (TAS), Rich Messaging Server (RMS), Media Resource Function (MRF), and Application Gateway (AG).

Key components of the Mavenir Wi-Fi Calling solution include:
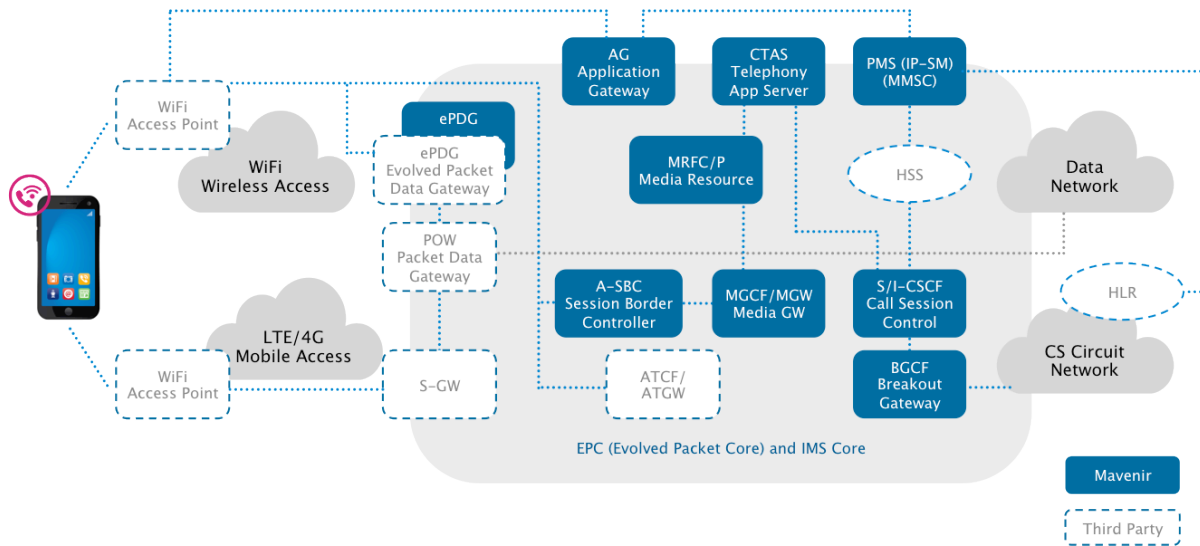
IP Multimedia Subsystem (IMS) Core – The IMS core solution offers a comprehensive suite of core networking functions, including:

- **Interrogating Call Session Control Function (I-CSCF):** Performs location and routing functions by interrogating the Home Subscriber Services (HSS) for location and registration information
- **Serving Call Session Control Function (S-CSCF):** Performs session control, feature/service control, resource allocation, and routing functions
- **Breakout Gateway Control Function (BGCF):** Selects the network to which legacy – circuit-switched (CS)/Public Switched Telephone Network (PSTN) – breakout is to occur and provides routing information

Session Border Controller (SBC) – The Mavenir SBC is used for wireless access from Wi-Fi networks where mobility is not required or supported – Wi-Fi Calling–enabled devices connect to the ePDG. This is a next-generation software-based SBC built using a flexible and modular architecture, with separately scalable control and media planes.

Telephony Application Server (TAS) – The Mavenir TAS is an IR.92/IR.94-compliant application server that provides voice and video services. The TAS offers many of the standard features found on a Global System for Mobile Communications – Universal Mobile Telecommunications System (GSM UMTS), and Mobile Switching Center (MSC) – and, as such, provides 100% service parity with the legacy network.