

A photograph of a man with dark hair, wearing a white t-shirt, smiling and talking on a mobile phone. He is standing in a modern, brightly lit home interior with a staircase and kitchen visible in the background.

VoLGA for Data-Only LTE Deployments

Why data-only LTE deployments need
embedded SMS services at launch, and
how VoLGA solves this critical issue.

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However, unlike the existing 3G network, which supports both a circuit and packet connection, LTE is an all-IP transport network that only supports a packet data connection. Unfortunately, this means that the existing circuit communications path to the mobile network for SMS (and voice) is not available over LTE.

The lack of SMS over LTE is an immediate and very real problem for operators. There is no mechanism to reuse the existing data service management systems. As a result, until this problem is solved, operators are going to be hard pressed to even launch an LTE service, let alone have their service be commercially available by the end of 2010.

→ Delivering Embedded SMS over LTE

There are three technology approaches for delivering embedded SMS over LTE.

One approach is IMS. Many operators view IMS as the long-term strategic platform for delivering services such as SMS and voice. Certainly the implementation of an IMS telephony infrastructure to provide embedded SMS communications is a costly 'heavy-weight' solution. In addition, there are some specific technical limitations to today's definition which would need to be resolved to provide a robust solution. Thus, given the cost and time for developing an IMS-based embedded SMS solution, it's unlikely that this approach will be implemented to resolve the problem.

Another approach is CS Fallback (CSFB). CSFB was originally defined in 3GPP Release 8 to support LTE handsets. It is based on implementing a new interface on the operator's installed MSC network. This new interface is used to send a paging message to the handset over the LTE packet network and request it to 'fall back' to a 2G or 3G network to receive (or make) a voice call.

For support of embedded SMS, CS 'Fallback' is a bit of a misnomer. In this instance, the USB dongle/laptop does not need to 'fall back' to 3G or 2G network to send/receive embedded SMSs. The original specification was augmented to include the ability to pass SMS over LTE via the interface defined for handset paging, thus eliminating the fall-back requirement.

However, there are some drawbacks to the CSFB approach. The first problem is time to market. While it was defined in Release 8, as of this writing there are no MSC vendors committed to delivering CSFB in their upcoming software releases. Even with a commitment to implement the feature, the market won't see anything for a while. MSC software releases are typically annual, so commitment for CSFB at the end of 2009 implies delivery at the end of 2010 or early 2011 at the earliest.

More importantly, operators are quite cautious about expensive upgrades to MSCs. A large number of critical systems attach to and rely on the MSC, including primary voice and SMS services. Operators typically execute rigorous and exhaustive evaluations of new MSC software releases before placing them into commercial service. Couple this with the time required to validate a CSFB implementation on a USB dongle, and in the best case scenario, any hope for an LTE service launch before 2012 seems lost.

The second problem is the CSFB upgrade must also be implemented in the visited network to support roaming. Thus, to achieve the desired results, visited networks must also upgrade their MSCs to support embedded SMS in a roaming scenario. It's not a realistic concept to assume that every operator worldwide will agree on the CSFB system and related upgrades.

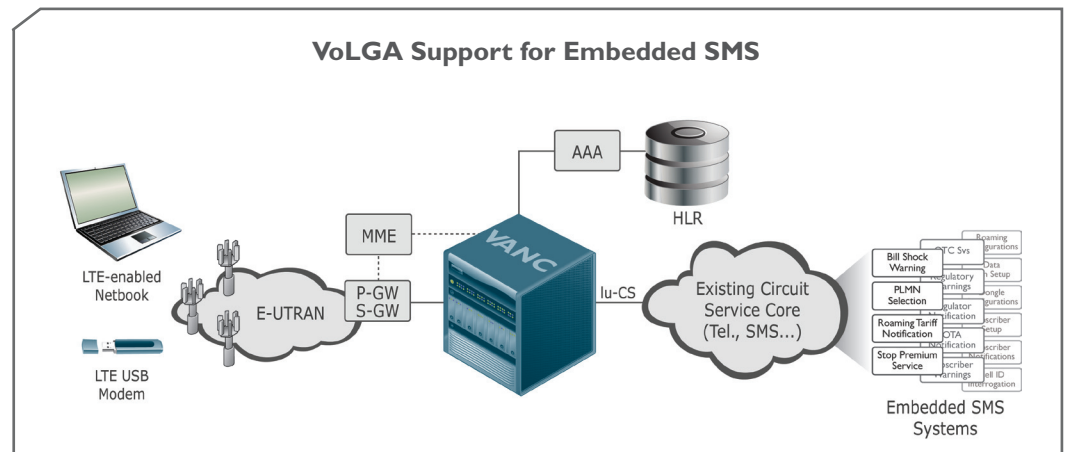
Finally, embracing CSFB for embedded SMS is tantamount to accepting it for general voice over LTE services. There are a host of separate issues associated with CSFB for voice services. Kineto has created a whitepaper articulating the pitfalls of CSFB for voice, specifically the poor user experience, the costly and complex network-wide MSC upgrades, the lack of LTE femtocell support and perhaps most importantly, that CSFB is a step *away* from IMS telephony, many operator's long term strategy. Because of these reasons, it is unlikely CSFB will be deployed to solve this problem. (Please see www.kineto.com/php/whitepapers.php)

→ VoLGA: Delivers Embedded SMS

VoLGA, or Voice and SMS over LTE via Generic Access, is the third and most viable option for delivering embedded SMS over LTE. The VoLGA specification defines how all circuit services (embedded SMS, voice, SMS...) are delivered over a packet access network. VoLGA forms a foundation on which operators can extend all their primary revenue-generating services over LTE from day one, starting with embedded SMS.

The VoLGA Forum, led in part by Deutsche Telekom (formerly T-Mobile International) was created to harness industry support for the technology. The group has drafted the VoLGA specification. The documents are published on the VoLGA Forum website.

Architecturally, VoLGA relies on a VoLGA Network Controller, or VAN-C, which interfaces between the existing MSC network and the LTE MME controller. The VAN-C packetizes and delivers any/all circuit MSC services, including embedded SMS, to devices over the LTE network.



VoLGA has several clear advantages over CSFB in the delivery of embedded SMS.

- VoLGA is a lower-cost, lower-complexity solution. Because it uses an external controller, there is less network impact in installing and validating VoLGA when compared to the MSC upgrade needed to support CSFB.
- VoLGA has a time-to-market advantage over CSFB. With the specifications nearly completed, there are several vendors actively developing VoLGA controllers today. It is estimated that VoLGA controllers will be available for lab testing in the first quarter of 2010 and available for commercial deployment in the third quarter of 2010.
- VoLGA can be implemented without any dependency on the visited network. An operator can deploy an LTE network with VoLGA, and use the home VoLGA controller to pass embedded SMS messages to the roaming subscriber (e.g. USB dongle user), even if the visited network has not implemented VoLGA.

As more vendors implement VoLGA controllers, the roaming USB dongle can access services directly from the visited network's VAN-C. But today, this significant advantage versus CSFB overcomes conflicting opinions in the marketplace.

- VoLGA provides a better user experience, a better path to IMS telephony (the longer-term strategic platform discussed above) and supports LTE femtocells natively. Rather than implementing CSFB for embedded SMS and then revisiting the decision to support voice, it's possible to use the VoLGA infrastructure to accelerate an operator's mainstream voice over LTE service offer.
- VoLGA is based on existing 3GPP standards. Rather than implementing a new interface and new protocol stack and then creating systems to test them, VoLGA is based on the existing 3GPP Release 6 GAN standard. Nearly every major telecom vendor in the world has developed products with GAN, and there is an existing ecosystem of test products available today.

→ Conclusion

Mobile operators are quickly moving to LTE. To minimize operational complexity, operators must reuse existing management, provisioning and customer care systems that rely on embedded SMS to communicate with the subscribers' USB dongle or netbook.

VoLGA provides a robust, proven method for extending SMS and voice services over broadband IP networks. VoLGA provides a compelling solution to the embedded SMS problem, a foundation to resolve the growing voice over LTE issue, and a better path towards a longer-term IMS telephony implementation.