

SMS Home Routing

Executive Briefing

Pioneered by Telsis, SMS Home Routing allows operators to do something previously impossible – increase revenues and reduce churn by offering phone users value-added services on inbound as well as outbound text messages.

Now ratified by the 3GPP, Home Routing is being deployed by visionary operators in Europe and the Far East.

This paper aims to give the non-technical reader a high level overview of SMS Home Routing, showing how it completes the development of the model new-era messaging infrastructure, and how it delivers powerful commercial advantages to deploying operators.



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Where Did Home Routing Come From?

Until Telsis unveiled Intelligent SMS Routing in 2003, GSM network messaging infrastructure had changed little since the first network went live in 1991. Then, radio coverage was patchy and phone battery life was short. Relatively few calls could be connected first time so voicemail was a critical feature of the service. The network signalling channel – originally created to carry configuration instructions to handsets – also carried alerts to let phone users know they had voicemail. Subsequently, engineers hit on the idea of using the signalling channel as a conduit for phone-to-phone messages – and SMS text was born. It became the world's most widely used mobile data service, generating an average of 20% of operator revenues and a high proportion of profit.

The success of text surprised and delighted operators, but the risks of running such a critical and commercially valuable service on a delivery mechanism that is essentially more than 15 years old were becoming increasingly apparent. As text volumes climbed, the relative fragility, inflexibility and high cost of ownership of the original store-and-forward messaging network infrastructure caused growing unease.

Telsis began a development programme aimed at creating a next-generation messaging infrastructure that would give mobile operators a future-proof platform for growing revenues still further. To replace the legacy schemes that introduced unnecessary delays and whose inflexibility was proving increasingly problematical, Telsis proposed edge of network SMS routers controlled by centralised intelligence.

The solution gives multiple benefits, among them scalable throughput up to the available bandwidth of the host network, far greater resilience, an ability to support new advanced services and a markedly lower total cost of ownership. In addition, it supports instant direct delivery of approximately 90% of SMS traffic that can reach target phones or systems at first try, making storage the exception rather than the norm. It also makes real-time decisions about the optimal routing of every message, ensuring that network assets are sweated much more efficiently.

The first deployments of Telsis Intelligent SMS Routing (ISR) were made in 2004. At first derided by other vendors, the Telsis concept was subsequently copied by them and generic SMS routing is now recognised globally as the de facto next-generation SMS messaging network technology with Telsis ISR the prominent solution.

But ISR was only stage one of the Telsis plan to give operators a new infrastructure upon which they could grow text revenues. Stage two was to remove a fundamental barrier to the delivery of universal advanced text services, one that existed as a direct result of SMS originally having been conceived as a voicemail alert system, not a messaging system. Namely, the inequality of outbound versus inbound SMS handling options.

The Roots of Inequality

Legacy SMS network architecture was not designed to support universal messaging; that is, messaging between any phone on any network. It was designed solely to enable operators to send voicemail alerts to on-net subscribers. As a result, only on-net outbound (mobile originated) and inbound (mobile terminated) traffic passes through their messaging centre. As the popularity of text became apparent and networks agreed to establish SMS interconnects, there was seen to be no advantage in making inbound off-net traffic transit the home message centre. Instead, it was agreed that delivery would be controlled by the sending network's message centre which would query its peer's Home Location Register (HLR) to establish the nearest base station to the target phone – and then send the message direct to that base station.

This, then, is a summary of the architecture enshrined in the original GSM standard and which exists in the majority of messaging networks today. With the luxury of hindsight, it is easy to



condemn the arrangement as rather bizarre, perhaps even short-sighted, because it disconnects the phone service provider from its customer and results in an architecture that has no parallels in any other sphere of communication.

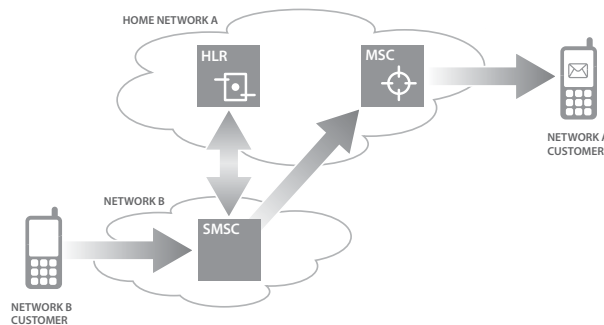
The delivery of traditional paper mail from overseas is carried out by the home country post office. Inbound email goes through the same server as outbound traffic. Inbound voice calls are delivered and controlled by home telco infrastructure. Inbound MMS traffic does not go straight to target phones but passes through a home message centre. These arrangements are logical and commercially sound because they enable the service provider to add value through add-ons, such as diversion and aggregation, that customers find useful and which generate further revenue.

Legacy GSM messaging is therefore the exception with an architecture within which advanced messaging systems, such as ISR, can add value to mobile originated and other on-net traffic, yet not to in-bound off-net traffic. The implication is two-fold: not only are operators unable to create new revenue streams from inbound traffic, which in some networks can be up to 40% of all messages, but phone users must do without the utility of services that would make it easier and simpler to organise their work and social lives. In an age when end-to-end service visibility and control is the mantra, SMS networks leave operators partially blind and not fully in control.

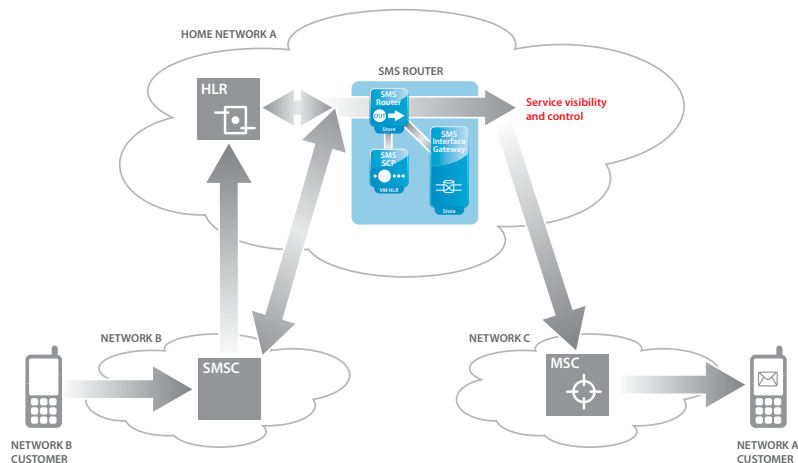
Home Routing – How It Works

Home Routing, pioneered by Telsis and now ratified by the 3GPP, rectifies the inequality created by the way GSM networks traditionally treat in-bound off-net messages. In doing so, it enables operators to add value to all classes of SMS traffic. The scheme has two primary components: an enhanced Home Location Register (HLR) and ISR which results in a subtly different, yet much more beneficial operational process.

In a legacy GSM network, an off-net message travels to the local operator's message centre which in turn queries the home network's HLR for the location of the target phone. It then delivers the message, by-passing the home network message centre.



In a network using Home Routing, the home HLR receives the 'where is?' query from the off-net message centre and, rather than responding with the address of the target phone, it passes the message onto the SMS Router which responds to it. The SMS Router receives the message, determines the phone's location from the HLR, applies whatever value-added services are selected by the customer, and then delivers the message.



The platform enables operators with Home Routing deployed to launch in days a menu of compelling text services that rivals without Home Routing are unable to match.

Home Routing – The Enabler of Advanced SMS Services

Home Routing combined with ISR has removed the two network level technical barriers that have until now prevented operators from offering comprehensive advanced text services to their customers.

UK operator O2, part of the Telefónica Group of companies, was one of the first to adopt Home Routing and has already deployed its first advanced service leveraging the technology. O2 Bluebook automatically saves to a centrally held archive every photograph, video and text message a subscriber sends and receives. Without Home Routing, Bluebook archives could not include inbound text messages.

While some operators plan to follow O2's example and develop their own advanced services, others regard the degree of risk involved as a barrier. For them, Telsis has created Telsis Advanced Services, a plug-in applications platform expected to see first service with a number of operators in Europe and elsewhere during 2008. The platform enables operators with Home Routing deployed to launch, within days not months, a menu of compelling text services that rivals without Home Routing are unable to match.

SMS Archive means a user need never lose another text message, even if their handset is lost, destroyed or damaged. Every message ever sent or ever received is automatically stored in a personal virtual safe in the network and can be browsed, printed and shared through the operator's customer portal. Service-dependent archives will create a powerful incentive for phone users to stay with their existing network.

SMS Copy which lets subscribers command the network to send messages to their phone, and copy them to a second handset of their choosing – for example between a business and personal mobile.

SMS Divert which lets phone users control the delivery of text messages, for example by sending them temporarily to a friend's or colleague's phone, or to an email address.

Subscribers to the **SMS Out of Office** service simply send a single simple text message to create their own unique auto-reply 'out of office' or 'away' notification message. The service mirrors the familiar out of office function offered by voicemail and email, helping phone users maintain their connections with friends and colleagues even when away and out of direct contact. In fact, we expect operators to automatically integrate this feature with voicemail settings.

SMS Blacklist/Whitelist lets phone users configure a list of allowed or barred senders. It is expected to play a major role in ending the scourge of text bullying/grooming, and of other unwanted text. As an anti-bullying/grooming measure, it will give parents the ability for the first time to control who can send text messages to their children's phones. Similarly, adult phone users will use it to block unwanted senders.

Advertising Sponsorship enables operators to monetise the blank spaces of text messages for users who subscribe to or buy suitably discounted tariffs. The blank space may be filled with product and sponsor text messages and promotions.

Brand Tagging allows an operator to tag or brand the unused space at the end of its customer's text with its brand name or special promotion information, helpdesk contacts or offers.



Conclusions

Leveraging proven ultra-high availability SMS routing technology to ensure service quality and continuity, Home Routing removes the compromise imposed by legacy GSM SMSC architectures. It brings GSM architecture in line with that of other established service models such as MMS, email, voice telephony and surface post where control over all deliveries is in the hands of the home service providers who have full ownership of their relationships with their customers.

By combining Home Routing with ISR, operators have a platform upon which to offer advanced text services to all customers all of the time. The first advanced applications are already emerging following early Home Routing deployments. Operators can develop and host advanced services on their own servers, or deploy a plug-in services solution such as Telsis Advanced Services for faster rollout and lower risk.

Home Routing is the key enabler and catalyst for advanced text services to become mainstream. As Home Routing deployments increase, phone users will have access to growing menu of new and compelling services with which to better manage their work and social lives. In turn, operators will benefit from new revenue streams and lower churn.

Home Routing means:

- ~ Service consistency and quality
- ~ Full visibility of SMS traffic flows
- ~ Service Enrichment opportunity
- ~ Monetisation of unused SMS body text

As Home Routing deployments increase, phone users will have access to growing menu of new and compelling services with which to better manage their work and social lives.

For a mobile service provider Home Routing restores the end-to-end service visibility and control lacking in traditional SMSC infrastructures.



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