

Application Note – Unintended Roaming

The Problem

Unintended roaming has been receiving a lot of attention recently in the form of negative publicity in the press. Sometimes referred to as Accidental Roaming, unintended roaming occurs when a subscriber switches to a “roaming mode”, even though the subscriber has not left his/her home zone or country. In some extreme cases simply moving from the kitchen into the living room may result in unintended roaming, often without the user being aware of the change.

Of course the subscriber becomes aware of the issue when they are presented with a larger than expected bill. Complaints made by subscribers, due to unintended roaming, take up valuable CSR time and the inevitable media fallout create bad publicity for the operator. Unintended roaming can also lead to costly payment disputes with roaming partners and unwanted regulatory scrutiny.

The Process

Roaming is the ability to make calls when connected to a network that is not the subscriber's home network. Usually established as a bilateral agreement between carriers sharing similar technologies, roaming, a premium service (higher per-minute cost), is used to extend coverage to areas that are not serviced by the home network operator. When customers travel outside their home network (Roam), they usually either disable the capability to roam (connect to other networks) or buy a specific roaming package. Buying a roaming package can help reduce the premium cost of roaming, whereas, disabling roaming will make the phone non-functional for calls and SMS outside the home-zone.

When subscribers travel within their own home zone they expect the home network to always be available. However, for a variety of reasons, the phone may attach to other compatible carriers when the home network should be available.

Unintended roaming can result in:

- Unintended charges; usually premium rate
- Lack of service when service is expected

Unintended roaming is usually as a result of:

- Poor network coverage or improper network optimization
- Incorrect call handoff from cell sectors

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- Usually occurs on the border of a network
- Can occur within the coverage area where there are gaps or poor optimization

Unintended roaming and gaps in coverage are usually brought to the light of day through customer complaints, however, there are tools available to carriers for identifying potential problem areas.

Unintended roaming can be identified and resolved through the use of localized drive testing. Drive testing is a method of measuring and assessing the coverage, capacity and Quality of Service (QoS) of a mobile radio network using an over-the-air interface. The optimum solution combines network-independent RF measurements using a digital receiver with traditional phone-based measurements. A typical collection system includes a digital RF Receiver, phone, PC, GPS receiver and antenna. There are numerous benefits in conducting periodic drive tests:

- Identifies gaps in coverage
- The drive test helps with the optimization of the various cell sectors to maximize coverage
- Identifies quality and capacity of cellular sectors through the use of a Mobile Radio Network Air Interface
- Helps carrier make directed changes to the network to increase customer coverage and service
- Tests the interfaces with OEM handsets to ensure that a “real-world” experience is replicated
- Prevents unnecessary charges by preventing/minimizing unintended roaming