

A Comprehensive Guide to Surviving the 2G GSM Shutdown

The sun is scheduled to set on AT&T's 2G network on January 1, 2017. AT&T will be shutting down the 2G network, forcing the machine-to-machine (M2M) industry to begin transitioning to 2G CDMA, 3G HSPA, or 4G LTE networks. This represents a major challenge for the M2M industry, as it will entail the replacement of devices, new contracts with network carriers, and time and cost of major system-wide changes.

Let's start by looking at the four key considerations of migrating from 2G GSM to another network.

4 Key Considerations of Migrating

1. Options for Migrating from 2G GSM

Migrating from a 2G GSM solution to any other solution will be challenging regardless of the approach used. There are a few options for replacements or upgrades, depending on your requirements.

- **Replace 2G GSM devices with 2G CDMA devices.**

The 2G CDMA network is independent of the 2G GSM network, and therefore will not be affected by the 2G GSM shutdown. 2G CDMA devices are generally more expensive than 2G GSM devices, but the 2G CDMA carriers are committed to at least 10 more years of service on the network. The 2G CDMA network provides better, though slightly more expensive, coverage than the 2G GSM network. That said, most M2M applications will not require the higher throughput of 3G or 4G LTE networks, meaning it might not make sense to invest the extra funds required by higher device and coverage costs.

Replacing 2G GSM devices with 2G CDMA devices will likely be the best option for many M2M applications: this option is cost effective, coverage is more reliable, and it is relatively future-proofed for at least 10 years.

- **Replace 2G GSM devices with 4G LTE devices.**

4G LTE coverage is a gamble right now. Devices are expensive, between 4 and 10 times the cost of 2G devices, and while the network is strong in certain areas, it is not ready for national coverage in its current state. How long it will be until the prices drop and the network is ready is unknown. 4G LTE radios are also generally single-band for the time being, meaning they are locked to one carrier. Multi-band devices that will work with more than one carrier are being rolled out, although these come at an even higher

cost. These will still need to wait for roaming agreements between carriers to be worked out before they will be able to provide for customers at their full potential.

- **Replace 2G GSM devices with 3G HSPA devices.**

3G HSPA devices are also a potentially risky investment, depending upon the location in which they will be deployed. As 4G LTE increases its coverage, there is less attention being paid to 3G HSPA coverage; in fact, a 3G HSPA shutdown is being predicted in about seven years, as many 3G HSPA networks are being replaced with 4G LTE. Many areas currently or are projected to only provide 2G or 4G LTE coverage. In areas only providing 2G coverage, 3G HSPA will only work in backward compatibility mode; if these areas provide 2G GSM coverage, a 3G HSPA device will still be affected by the shutdown. As many areas only have enough spectrum to support one network, 3G HSPA could be overlooked in the jump from 2G to 4G LTE.

2. Cost of Migrating from 2G GSM

The migration from 2G GSM networks won't be cheap. Estimates place the number of 2G GSM devices currently in use between 10 to 12 million. This will represent several billion dollars across the industry over the next two years.

Costs will depend on the device and network selected to replace 2G GSM devices. Device costs range from 2G CDMA devices as the least expensive to multi-band 4G LTE devices as the most expensive. Network costs are similar, ranging from 2G CDMA to 4G LTE, although the speed of 3G HSPA and 4G LTE networks can sometimes make up a bit of the cost difference; because 3G HSPA and 4G LTE networks enable tasks to be accomplished faster than 2G networks, they reduce the amount of airtime necessary for each task.

3. Time

The clock is ticking on the 2G GSM shutdown. AT&T's hard date of January 1, 2017 shows no signs of being pushed out, and indeed could be pulled up in certain areas. If one accepts the estimate of 10 to 12 million 2G GSM devices currently in use, and assumes there are 200 working days per year, the math works out to roughly 25,000 to 30,000 devices per day that need to be upgraded or replaced. While migration is not a decision that should be rushed, the sooner companies can begin the process, the better off they will be.

4. Future-Proofing Designs: When Will You Have to Update Again?

With the 2G GSM shutdown causing so much disruption across the M2M industry, how long will it be until the next shutdown causes another migration scramble? It's hard to say for certain, as it will depend on the deployment of 3G HSPA and 4G LTE networks, and the development of new networks. 2G CDMA carriers have committed to supporting the network for at least 10

more years. 3G HSPA is rumored to be on the horizon in about seven years. 4G LTE shows no signs of slowing down yet, but that could change as soon as a new technology is announced.

Simplifying the Migration Process

A major network shutdown and the resulting migration is never a simple task. There are a number of factors to consider, and there is a lot of conflicting information floating around. In order to ensure the smoothest transition possible, it's vital to have a partner who can help guide you through the crucial decisions.

Symmetry Electronics can help simplify the migration process through a comprehensive product offering and extensive technical support. Symmetry's expertise in wireless designs is invaluable for customers trying to simplify the migration process. Our Technical Marketing Engineers and our field sales team are primarily engineers by trade and go through extensive factory and in-house product training so they can provide phone and email support for specific technologies, hands-on experience with development kits, and detailed design support with schematic and design reviews. They are able to provide guidance and support through all phases of the design cycle.

Symmetry offers replacements for existing 2G GSM design-ins. Multitech offers a number of M2M products covering 2G CDMA, 3G HSPA, and/or 4G LTE, including the embedded SocketModem Cell, the embedded SocketModem iCell, the MultiConnect® rCell 100 Series, the MultiConnect® Cell 100 Series, and the QuickCarrier™ USB-D dongle.

Symmetry also offers exclusive custom Telit IN-A-BOX kits for 3G HSPA and 4G LTE connectivity. These kits are designed to make cellular M2M design easier by providing development kits based on the Telit CE910, DE910, HE910 and GE864-GPS M2M modules. Each kit includes everything required to begin a cellular design for a variety of applications: a Telit EVK2, a Telit Interface Board, software development introduction tools, cellular antenna(s), power supply, and the Getting Started Guide and documentation.

You don't have to face the 2G GSM sunset alone. Call Symmetry Electronics at (310) 536-6190 for technical guidance and all the latest M2M connectivity devices, or contact us online.