# RFID

# Mifare RFID Tags : An FAQ on ID Issues

## 4 Bytes Good, 7Bytes Better

Users of Mifare RFID tags may have been dismayed to hear in the early part of 2010 that NXP, the developers of the chip, expect that the range of unique ID's available in the Mifare's 4 byte ID code is likely to run out by the end of 2010.

How will this affect users and how should they plan to respond to the news? This short FAQ aims to provide the answers.

## What's The Problem?

When the Mifare "Classic" tag was introduced by NXP in 1994 it was given a 4 byte space to hold the identity number of each Mifare tag issued. This allowed for over four thousand million unique ID (UID) codes but, such has been the success of the Mifare chip the developers have advised users that they will run out of unique codes by the end of 2010.

For RFID applications which depend on a unique tag identity and which use the Mifare chip, users will face a problem.

### Does this affect all Mifare tags?

No, only tags with a 4 byte UID are affected. It affects the original Mifare Classic tags and it also affects those Mifare Plus tags delivered with a 4byte identity code (as this was a compatibility option available when the Mifare Plus and Plus X were launched). It does not affect the Mifare DESFIRE or Mifare ULTRALIGHT chips which have a seven byte identity already. Nor does it affect those Mifare Plus and Plus X tags implemented with a seven byte identity.

### What is the problem of non-unique ID's?

For many systems the risk of two tags having the same ID is unimportant. However if tags are used as part of cash based systems (for example tolling and ticketing – a common use for Mifare) or for access control or in other information critical or safety critical environments, then the danger of two tags or cards having the same identity may mean that the risk cannot be ignored. For some applications though, users may simply decide that the risk isn't worth worrying about.

### What is NXP doing about this?

NXP are offering two approaches, the 7 byte UID option and the 4 byte ID option.

To continue to provide unique identities, NXP is making available a version of the Mifare Classic chip that has a seven byte identifier. This will be available to tag manufacturers from the second quarter this year and tag manufacturers will be able to start building it into their products from that point onwards. NXP view this as the best route forward for integrators of their chips and for end users.

To allow users to continue with 4 byte ID's, when the 4 Byte UID range has run out, NXP will produce tags with a 4 byte ID. Unlike the current 4 byte ID tags these are not guaranteed to be unique but provide an easy way forward with a little

risk of receiving a tag with a duplicate ID. However should only be used in systems where a duplicate can be tolerated and where it is not critical should one occur.

*What are the options available to systems currently using 4 byte UID's?*

There are two possible options.

1. Switch to use of the 7 byte UID (this is the recommended option)

2. Continue using 4 byte ID's (i.e. non-unique)

*Will my existing readers work with the new 7 bytes ID cards?*

It is difficult to give a categorical answer to this. Some ISO 14443-3 compatible readers will support both (the ISO standard refers to "single size" (= 4byte) and "double size" (=7byte) UIDs but, equally, some will not. If a reader supports the Mifare Ultralight it will, in all probability, support the new 7 byte UID Mifare Classic tag.

*Will my current applications need changing?*

Systems migrating from 4 byte to 7 byte UIDs may need changes to application code. Users with systems that intend to stay with the current 4 byte infrastructure may need further sub-systems to be developed in order to handle blacklisting of duplicate chips, or improving tag lifecycle management to ensure that duplicates do not appear in service together.

*What is CoreRFID doing about this?*

CoreRFID is taking the following steps in response to this issue:

1. We will continue to meet customer demand for 4 byte versions of the Mifare Classic for as long as this is possible.

2. We will work with customers to help them migrate to the new chip version where necessary.

3. From now we recommend 7 byte UID versions where a Mifare implementation is being considered.

4. We will make clear for all products on our web shop that are affected by this whether or not they support 4 byte, 7byte or both versions.

*Where can I found out more?*

NXP have produced more detailed information. A copy is available on the CoreRFID web site here.

## CoreRFID's Capabilities

CoreRFID is happy to provide Mifare Plus S or Mifare Plus X tags and to work with users on the implementation of projects using these technologies. CoreRFID can also provide a full range of personalisation services for Mifare tag based cards including such facilities as card overprinting, embossing, photo engraving and so on.

For more information on Mifare tags see our fact sheet: 067 Mifare Tag Buyers Guide.

## About CoreRFID

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